JAN 28 1929

Courts Have Held That Pharmacy Shall Be Practiced Only by Those Charged with That Responsibility by the State—a Deduction May Apply That an Establishment Unprepared to Meet These Provisions Should Not Be so Designated.

Vol. XVIII, No. 1 JANUARY, 1929

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 77th ANNUAL MEETING WILL BE HELD AT RAPID CITY (BLACK HILLS), SOUTH DAKOTA, DURING WEEK OF AUGUST 26, 1929.

F. W. Brown, Lead, So. Dak., Local Secretary

The 1929 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conferences of Pharmaceutical Association Secretaries will also be held at Rapid City, same time and place

For Association Roster and Roster of the Boards of Pharmacy, of Officers of Pharmaceutical Associations, Local Branches, see pages x, xii, xiv, etc.

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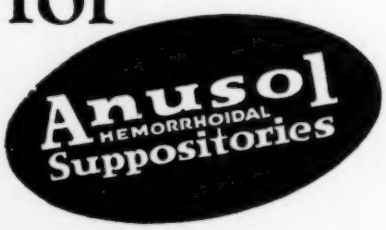

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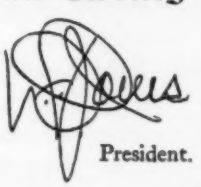
May the year nineteen hundred and twenty-nine be the most prosperous of all the years of your experience.

I believe that it will be, for those who will study their own individual problems in the light of experience, which may be gained from comparing situations immediately surrounding them; or by taking this experience and placing it with the experience of others making a most careful study of the combination.

In no case should a pharmacist so far forget the study of the details of his own business as to allow his mind to be influenced beyond control, by the paid propagandists or even those who may have in mind, first of all, their own personal gain.

Do not allow anything that may so influence during the year to break the natural gait, as so frequently happens with the over-nervous horse on the race track.

Keep Your Gait for Nineteen Twenty-Nine.



President.

Watertown, S. D., Jan. 1st.

H. A. B. DUNNING.

UNIV. OF MICH.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XVIII JANUARY, 1929 No. 1

H. A. B. DUNNING.

The President-Elect of the AMERICAN PHARMACEUTICAL ASSOCIATION for 1929–1930 is Henry Armit Brown Dunning. There is no desire to compare the qualifications of the worthy nominees, all of whom are highly qualified for the office and who, no doubt, appreciate the honor conferred by their respective nominations.

Dr. Dunning gave brief expression to his estimate of pharmacy when the Remington Honor Medal was awarded to him,[1] by saying that we should recognize our obligation to give something of ourselves to the service of our calling, so that the proper mission of pharmacy may be fulfilled and the recognition so richly deserved may be given to it. It was his opinion that pharmacists, as a class, were not as self-respecting as they should be; that they gave a service to humanity, not excelled by the representatives of any other calling. He referred not only to the accommodations which are continuously open to the public through retail pharmacies in free service, courteous attention and helpful advice, but to the services of highly trained and technically educated, intelligent men and women who dispense potent drugs and chemicals, whose knowledge and skill safeguard their patrons, contending that the lives of the people are in the hands of the druggists to a far greater extent than in those of any other class, profession or trade. In his opinion, greater recognition and appreciation would be accorded pharmacy if the public realized that in every drug store there are hundreds of dangerous drugs, relative to which the pharmacists must be fully informed, not only as to their individual properties, but when compounded; that they must be constantly on guard in dispensing of drugs of right quality and dosage, and under proper conditions for the protection of the patrons.

Respect for the professions is instilled by fear—the minister dwells on the present and the hereafter in persuading his people to walk the straight and narrow path; the lawyer points out the possibilities of punishment or loss to his clients; the physician and dentist dwell on the development and results of sickness, acci-

[1] May JOUR. A. PH. A. (1926), 483.

dents and disease; the pharmacist has an equal right to stress the dangers in the preparation of medicines and how the pharmacist can and does protect the physician and the patient.

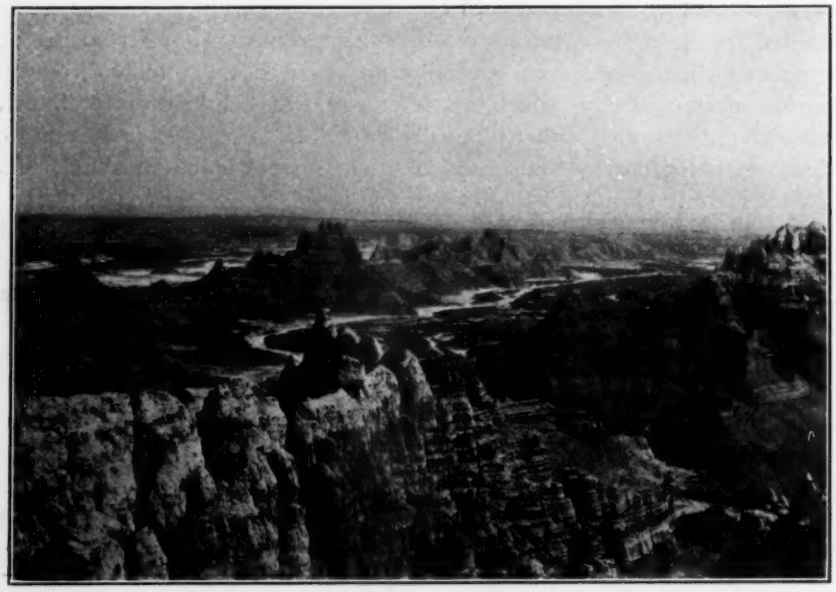
A sketch of the President-Elect will be found in the JOURNAL A. PH. A., for July 1924, 593. The introductory paragraph of this sketch is quoted in the following:

"If Dr. Dunning should do no more for the AMERICAN PHARMACEUTICAL ASSOCIATION than he has accomplished as Chairman of the Headquarters Building Campaign, he has earned a place among the leaders; if he does no more for organized pharmacy than he has as leader in the first national movement in which pharmacists of every class have joined their efforts, he will deserve the gratitude of every pharmacist—and it is likely that the significance of this latter phase of Dr. Dunning's work will not be overlooked in all future efforts for pharmacy in a national way."

Attention should here be called to his report on the Headquarters at the Portland meeting, printed in the October JOURNAL A. PH. A., pages 1021–1023. In closing, the last paragraph of the sketch referred to is reprinted:

"This is a brief résumé of the efforts and work of this pharmacist who has demonstrated his interest in the AMERICAN PHARMACEUTICAL ASSOCIATION in a most practical manner. He believes in its future if properly equipped and endowed, and is willing to give of his time and success to its development. In the prime of life, a logical thinker, a consistent and effective worker, devoted to his profession—pharmacy in general, his state association and the AMERICAN PHARMACEUTICAL ASSOCIATION look forward to his greater success."

Congratulations are extended to the President-Elect and the ASSOCIATION on his election, with the hope that his term of office will be a most successful year for pharmacy and the AMERICAN PHARMACEUTICAL ASSOCIATION.



Hell's 10,000 acres, Bad Lands, South Dakota—50 miles east of Rapid City—A. PH. A. Convention City, week of August 26th.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

UNCONQUERED DISEASE.

THE daily press of December 14th carried an Associated Press dispatch from Washington stating that:

> "Surgeon-General Cumming, after conferring with the 'board of strategy' he appointed to make a study of the influenza epidemic, to-day made public a program of precaution to aid in combatting the disease but at the same time emphasized that the hope of preventing its spread was an illusive one."

The last few words in that statement carried a depressing realization of the present-day lack of knowledge of the human body, the foes which attack it, and our ability to administer such compounds as would strengthen the resistance of the body to disease.

Despite the work of bacteriologists, pharmacists and chemists, influenza, with its may years of ravage upon the people of the world, still constitutes one of the many "unknown lands" for scientific exploration.

The press of December 14th also carried notice of the closing of schools and colleges throughout the country in the hope of preventing spread of this disease. What an economic loss is here alone represented. The great educational machinery of the country is stopped, but the economic loss is not confined to educational circles alone.

Though this epidemic is fortunately and fortuitously of a mild type, nevertheless, men and women are to-day ill, suffering, failing to contribute their share to the world's progress, and in all too many cases, failing to receive from their daily effort that remuneration which enables them to meet the daily expenses of living.

This situation gives rise to serious thought as to what we as a nation are doing in this matter. The attention of the present session of Congress has been given to the Boulder Dam project; the Senate has just passed a bill authorizing an appropriation of $165,000,000 for this purpose. There is, however, another measure on the Senate calendar which we believe to be of far greater significance to the nation than any water power development, namely, The Ransdell Bill, S. 4518, which has been approved by all the leading scientific associations and by a great mass of men whose interest in public health work is unquestionable and unselfish.

This bill in its latest form has been unanimously recommended by the Senate Committee on Commerce for favorable passage. It contains three outstanding features,

1. The enlargement of the present Hygienic Laboratory of the U. S. Public Health Service into a National Institute of Health.
2. The creation of a system of fellowships within the Public Health Service for carrying on the research in the National Institute of Health.
3. The authorization of acceptance of funds offered unconditionally

by individuals for the support of research of this character, a policy which has already proved so helpful in the work of the Congressional Library.

This is a time for action. The goal of pharmacy is highest service to humanity. Our representative has spoken for the profession at the hearings on this bill, now let us each add a strengthening voice to the call upon Congress for the speedy enactment of this beneficient legislation. C. H. H.

THE IMPORTANCE OF A NAME.

UNDER the heading "An Unpardonable Abuse," a recent number of the Industrial and Engineering Chemistry carries an editorial protesting against the "misuse" of the title "Retail Chemists" in the name of a company which, it is stated, has been formed to take over a group of drug stores. In this editorial it is stated that, in England, the chemical profession has been distinctly embarrassed by the appropriation of the name "chemists" by those who are pharmacists and that the executives of the company referred to should withdraw the name "The Retail Chemists Company" and substitute therefor some designation that really describes what they intend to do. It is evident that the American Chemical Society is deeply concerned over the situation that may result from the use of the name chemist for those who are practicing another profession which is "kindred to, but distinct from chemistry."

In the laws of the several states regulating the practice of pharmacy, there have been used certain definite names for those engaged in it, and it does seem appropriate and wise to employ these names which by custom, indicate to the public the character of the service they may expect to receive in the establishments so designated. The sale of drugs and medicines and the compounding of prescriptions has a definite relation to the public health and those who engage in these very responsible activities should coöperate to the fullest in throwing around them every safeguard that can be employed against the misuse and abuse of the important agents furnished by them.

It is not too much to say that the name of the establishment has an important bearing in this connection and that the time has come when serious consideration should be given to the selection of an appropriate and correct title for establishments which furnish drugs and medicines and fill prescriptions, from the standpoint of the interests of the public.

In the mean time, we hope that the already badly confused situation will not be made worse by the introduction of another name for drug stores and pharmacies and especially one that is objected to by a sister profession.

RELATED QUESTIONS.

PHARMACISTS are discussing whether pharmacy is a trade or profession and doctors are arguing the question—"Is Medicine a Science or an Art?" Dr. William Allen Pusey, former president of the American Medical Association,

answers—"Both!" Doctors are pleading for the development of individual thinking in medical practice; and pharmacists do not want to lose their individuality in mass production, buying and selling methods.

Dr. Pusey contends that "Medicine is not all science, nor can it be. Medicine's business is only a part with science; its business is quite as much with art. Science's concern is with facts and their interpretation. It prides itself, and properly, that facts are what it is after, regardless of their application. Medicine on the other hand, is very much concerned with the practical application of facts. Its proper business is the relief and prevention of suffering, through application, as far as possible, of the facts of science to the art of medicine; but of facts, whether they have been arrived at scientifically or not. It is medicine's business to help mankind." Further on, Dr. Pusey makes the statement that "the reason for the existence of medicine is the practical service to man."

The reason for the existence of pharmacy is the practical service to man. All of this service is not rendered directly to the patient, but largely by direction of the physician. It is a service of supplying medicine in most effective form, using due care in the preparation, thereby protecting the physician as well as the patient, hence both are concerned in the pharmacy and in the qualifications of the pharmacist, to uphold the standards and restrict the preparation and sale of medicines to those properly trained and who, therefore, realize their responsibility. This constitutes protection and who will say that one is less important than the other in the preservation of life and health.

Realization of responsibility comes with proper pharmaceutical training and education. Members of related professions acquaint the public, in a dignified way, with the importance of their professions; this has been pointed to by leaders and rightly so, as a service. There is no reason why pharmacists should not do likewise; greater pride in the profession will contribute to its service.

"Not all the art of medicine is at the bedside, nor all the science of medicine in the laboratory."

OFFICERS-ELECT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Board of Canvassers of the AMERICAN PHARMACEUTICAL ASSOCIATION composed of Oscar Hallenberg, Glenn M. Cook and H. O. Tiegen, all of Bismarck, N. Dak., has announced as the result of the mail ballot for officers of the Association, the election of the following:

President, H. A. B. Dunning, Baltimore, Md.

First Vice-President, A. L. I. Winne, Richmond, Va.

Second Vice-President, W. B. Goodyear, Harrisburg, Pa.

Members of the Council (for three years), J. H. Beal, Camp Walton, Fla.; C. E. Caspari, St. Louis, Mo.; C. H. LaWall, Philadelphia, Pa.

Member of the Council (for one year, to fill the unexpired term of the late Geo. M. Beringer), W. Bruce Philip, San Francisco, Calif.

These officers will be installed at the next annual meeting of the ASSOCIATION in Rapid City, S. Dak., August 26–31, 1929.

EXCURSION RATES TO RAPID CITY.

BY T. J. BRADLEY.

CHAIRMAN OF THE COMMITTEE ON TRANSPORTATION.

For the first time in several years, members of the AMERICAN PHARMACEUTICAL ASSOCIATION attending the 1929 meeting at Rapid City, South Dakota, will be able to buy excursion tickets at a substantial reduction from regular fares. Summer

tourist rates will be in effect from most points to Rapid City or Deadwood and the Committee on Transportation has secured the following as samples of what the rates will be from various sections of the country.

Atlanta, Georgia	$73.95	Montreal, Quebec	$85.30
Baltimore, Maryland	81.35	New Orleans, Louisiana, via Omaha	78.35
Birmingham, Alabama	66.50	New York City	87.02
Boston, Massachusetts	98.56	Omaha, Nebraska	24.65
Buffalo, New York	64.80	Ottawa, Ontario	79.90
Cincinnati, Ohio	51.15	Philadelphia, Pennsylvania	84.04
Dallas, Texas, via Omaha	58.50	Phoenix, Arizona, to Deadwood	87.30
Detroit, Michigan	50.40	Pittsburgh, Pennsylvania	61.71
Houston, Texas, via Omaha	71.25	St. Paul, Minnesota	28.10
Indianapolis, Indiana	45.30	St. Louis, Missouri, via Omaha	37.70
Jacksonville, Florida	92.20	Salt Lake City, Utah	64.60
Kansas City, Missouri, via Omaha	33.50	San Francisco, California, to Deadwood	95.50
Los Angeles, California, to Deadwood	95.80	Toronto, Ontario	64.60
Louisville, Kentucky	54.15	Washington, District of Columbia	81.35
Minneapolis, Minnesota	28.10		

These figures are as accurate as could be secured at this time, and they are from thirty to forty per cent less than regular fares. Sleeping-car fares must be added to each rate.

The only section in which summer tourist rates to Rapid City or Deadwood do not seem to be in effect is the far Northwest, as no rates are published from Seattle, Washington or Portland, Oregon.

These rates are not dependent on the number attending the convention and are good going at any time after June first and for return to the starting point until October 31st. Members can ascertain if summer tourist rates to Rapid City or Deadwood are in effect from their stations. If none is in effect at a station, local tickets should be bought to the nearest point from which the summer tourist rates are in effect, and the excursion ticket bought there. Members from the east and southeast can arrange to return by way of Minneapolis and attend the meeting of the National Association of Retail Druggists there, in September. Special cars or a special train will be provided from Chicago and a stopover at Rochester, Minnesota, will be arranged for those who wish to visit the Mayo Clinic.

The 1929 meeting is to be held in an extremely interesting section of the country, which is unfamiliar to most of the members, and there will undoubtedly be a large attendance. Further particulars concerning transportation to the meeting will be published in later numbers of the JOURNAL, as they are secured.

GIVE THE DRUG STORE MORE OF A PHARMACY ATMOSPHERE.*

"I look upon the teachers and the editors as men of outstanding influence. It is their privilege to mould and guide the thoughts and actions of the followers of pharmacy.

"Editorial influence has encouraged wholesome legislation. It has supported pharmaceutical education. Our journals have promoted sound business methods. In former days the journal was one of the primary sources from which the apprentice turned for education, and toward which the proprietor looked for guidance in the practice of his art.

"Hand in hand with journalism stands the College of Pharmacy in its work of guiding youth to become pharmacists. Interlocking with both are the associations. Each is complementary to the other. The advancement of pharmacy must come from the united efforts of these agencies.

"Looking over the position of the drug stores of our land at the present day one is struck with the fact that in many respects they lack the elemental features of our conception of a drug store. They may sell drugs and medicines, put up prescriptions and carry on the business of a drug store, but they do not look the part. We may sometimes wonder whether this changed atmosphere in the drug store has not caused a loss of confidence on the part of patrons, giving to the store a lower caste.

"An outward survey of the ordinary drug store of to-day reveals a heterogeneous array of merchandise gathered from many lines of trade lacking in specific features or character. It is a shapeless, formless mixture of merchandise. It is neither a stationery store, a notion shop, a grocery, an ice cream parlor nor a restaurant. Nothing stands out by which it can be recognized or remembered. As

* Abstract of remarks by Dr. Fred B. Kilmer at a luncheon held at the Drug and Chemical Club, New York City, December 19, 1928.

one speaker expressed it: The Drug Store of to-day is not Pharmacy-Conscious.

"A Western Druggist modernized his store by moving the old time shelf ware, show globes and other old-fashioned stuff to the garret, and found that his family and prescription trade fell off. He restored enough of them to give his store a drug store appearance, and the lost trade came back.***

"Visiting the store of an old time acquaintance I noticed that he was making his prescription department prominent. I was curious; he informed me, that really there was no prescription trade in his town—that the doctors all dispensed their own medicine; but, he added: 'I find that when I advertise prescriptions I can get a better price for a lead pencil.'

"A druggist in one of our large cities tied his store up with a dairy. The milk is produced and bottled under systems which he supervises and certifies. He gets a royalty of five cents a quart and the sales exceed five hundred quarts per day.

"If a druggist must go into the food business, why not give it a pharmaceutical twist and charge for it? In modern medicine, the diet therapy has assumed far greater importance than drug therapy.

"If a druggist is in the lunch trade, why not specialize in furnishing diets according to the prescriptions of the attending physician?

"Few homes or restaurants are equipped to prepare the diets called for in modern practice. There is a strong demand from patients who are not confined to the hospital for a place where they can secure the prescribed diet. The druggist above all others can fill the need.

"Hygiene and public health is a subject now being stressed by writers and speakers. We find in this millions of new customers for the drug stores. Its application runs through the whole realm of pharmacy. There is home hygiene—the care of the family. The avoidance of sickness, the keep well, keep fit doctrine—these make for the sale of drug store items; soaps, skin lotions, toilet wares, tooth brushes, tooth washes, shampoos, antiseptics, disinfectants and a multitude of wares which belong to pharmacy.

"In the drug store of the present day business is paramount. The druggist must increase volume of sales and profits or go broke. The Drug Journals fill their pages with schemes for increasing sales of soda water, sandwiches, cigars, candy, stationery, knickknacks and sundries of all sorts. This, of course, appeals to the reader who, above all else, wants to increase his sales and profits.

"Slowly advancing in the drug field we have glimpses of ethical pharmacies, prescription stores, stores where the atmosphere is that of pharmacy. Can we not give to every store an atmosphere of pharmacy, a pharmaceutical halo? Can we not put drugs back into the drug store without disturbing the trade in the thousand and one items now sold? Can we not add pharmacy in such a way that every customer who enters the door will know that he is in a drug store? It may take time and heroic effort, but I believe that it can be done.

"I am not an editor, but roughly I have thought that it might be helpful if our Journals were to inaugurate a Department which shall carry a series of well-worked-out articles, showing in detail and with conciseness how to increase trade and profits in commodities which are pharmaceutical in character.

"The following occur as suggestive subjects:

Pharmaceutical Preparations	Maternity Supplies
Household and Emergency Medicines	Infant and Invalid Foods
Hygiene and Public Health	Articles pertaining to modern therapeutic diet
Serums	First Aid Supplies
Disinfectants	Surgical Dressings
Insecticides	Ligatures and Sutures
Prescriptions	Physio Therapy appliances—(light and heat rays, etc.)
Physicians' Supplies	Home Hygiene
Sick-Room Supplies	Keep Well Supplies

"Many other subjects could be added.

"My plan contemplates that our Journals shall add to their already established features a series of articles of this character, possibly by special writers, illustrated and built along specific, concise and well wrought plans, telling the reader just how to carry on the work.

"Such articles may well cover methods of store display, counter display, departmentizing. The open prescription department might be exploited. Methods of circularizing and other forms of advertising should be given.

"The idea is to inject into the modern store an atmosphere of pharmacy; add to the business of the present-day drug store an increased business in items now neglected; to make the druggist pharmacy-conscious. In my judgment, a well-worked-out plan of this character will increase the interest of the readers of the Journal. It may be made to increase the subscription list, and possibly increase the advertising patronage.

"I am aware that articles of this character have appeared in our pharmaceutical journals. My idea is to do this systematically, repeatedly, and continue it as one of the features of pharmaceutical journalism.

"I would have this reinforced through our Colleges of Pharmacy. Some of these colleges now carry business courses. The idea is to have them emphasize the business side of pharmacy; to teach the student how to make money in the pharmaceutical side of his calling.

"To these two forces, the pharmaceutical journals and the colleges, there might be added that of the pharmaceutical associations, where, at the meetings, papers, talks and demonstrations might be given, showing the druggist how he can make money by following pharmacy.

"To put it briefly, the idea is to inaugurate a continuous campaign, a 'First Aid Week' and a 'Pharmacy Week,' which will be continuing possibly for several years; a campaign which tends to show the druggist a way through which he can superimpose a profitable business in lines allied to pharmacy upon the trade which already comes to his store."

SWEDISH PHARMACISTS CELEBRATE ANNIVERSARY.

Pharmacists of Sweden recently celebrated the 150th anniversary of their organization. The history of their profession, as such, dates to 1621, when King Gustavus Adolphus granted them royal privileges and stipulated that no new shops were to be opened without authorization by the state. Swedish pharmacists enjoy an equal social standing with physicians.

At present the Swedish apothecary shops retain the appearance which they had three centuries ago, and their prestige is such that attempts to open "drug stores" on the American plan have been abandoned abruptly.

SCIENTIFIC SECTION

THE ALKALOIDS OF BOCCONIA FRUTESCENS L.

BY EMERSON R. MILLER.

The genus Bocconia, belonging in the *Papaveraceæ* or Poppy family, furnishes plants of much interest because of their beautiful foliage; they are, however, of especial interest to the plant chemist on account of their alkaloidal content.

Bocconia Frutescens, L.

Plants of the species *Bocconia frutescens* grow in Tropical America, the Caribbean Islands, Cuba, Mexico to Peru.

By Grisebach[1] they are described as suffruticose herbs with petiolate, oval oblong, sinuate pinnatifid leaves, the uppermost ones sometimes not divided. The leaves are large, particularly those of young plants, being six inches or more wide and twelve to eighteen inches long. The stems are from three to ten feet high with the flowers in pyramidal panicles, often a foot or more in length.

The beginning of chemical work on Bocconia may be said to have been made in 1881 by Ernesto Ochoa y Tapia[2] who examined the bark of *Bocconia frutescens* and reported indications of alkaloids, though no base was identified.

In 1884, Eijkman[3] made a chemical study of the roots of *Bocconia cordata*, called by him *Macleya cordata*. He extracted sanguinarine and another alkaloid which he called *macleyine*, now thought to be identical with *protopine*.

In 1891 Rusby[4] described several species of *Bocconia* growing in South America and published illustrations of *Bocconia cordata*, *Bocconia frutescens* and *Bocconia arborea*.

In 1892, J. M. Lasso de Vega[5] reported upon the constituents of the bark of *Bocconia frutescens*. In addition to the more common constituents such as coloring matters, oil, resin and extractive he reported finding a glucoside and, apparently, two alkaloids, one yielding red crystalline salts and the other giving white salts. The former he called *bocconine*, but did not really identify any alkaloid.

---

[1] Flora of the "British West Indian Islands" (1864), 13.

[2] *Estudio sobre la Corteza del Bocconia frutescens* (1881).

[3] *Rec. trav. chim.*, 3 (1884), 182.

[4] *Bulletin of Pharmacy* (August 1891).

[5] *Gaceta Medica de Mexico*, Tom, 28 (1892), 367–373.

According to Murrill and Schlotterbeck[1] bocconine is most probably identical with *β-homochelidonine*, which forms colorless salts. The red crystals were, no doubt, *sanguinarine* salts.

In 1895, J. A. Battandier,[2] using the bark of a large specimen of *Bocconia frutescens*, separated a mixture of alkaloids in which he identified *fumarine*, *bocconine*, a third alkaloid giving reactions very similar to those of chelidonine and lastly, much *chelerythrine*. *Fumarine* is now considered to be identcal with *protopine*.

In 1898, Hopfgartner[3] examined the stems and leaves of *Bocconia cordata* (called by him *Macleya cordata*) for alkaloids and separated *protopine* and *β-homochelidonine* but found no *sanguinarine*.

In 1900, Murill and Schlotterbeck[4] investigated *Bocconia cordata*, using mainly the root. They separated *protopine*, *β-homochelidonine*, *chelerythrine* and *sanguinarine*.

EXPERIMENTAL.

While connected with the Cuban Experiment Station the writer, through the kindness of the late Dean Charles Fuller Baker, was able to obtain a quantity of material from both the old and young plants of this species. The largest specimen observed was ten or twelve feet high with a decidedly woody stem three to four inches in diameter. The inner bark has a very acrid taste and varies in color from deep red to pale yellow.

An examination of the bark of the large plants showed that it is rich in alkaloids and also contains a considerable amount of a reddish brown resin.

Greater interest, however, attached to the leaves both because of their size and also because they had not been the subject of a chemical investigation.

The dried powdered leaves were extracted mainly by means of hot 95% alcohol, the alcohol in greater part distilled off and the residue mixed with acidulated water, the filtrate made alkaline with ammonia water and the precipitated alkaloids shaken out with ether. It was found that the mass of amorphous bases was readily soluble in ether, but soon separated from it in crystalline condition.

The ammoniacal liquid was shaken out by chloroform and the resulting bases repeatedly crystallized from alcohol and a mixture of alcohol and acetic ether.

From the crystalline mass there were separated, mechanically, long prismatic crystals which melted at 168–169° C. A small amount of this material was obtained and subjected to elementary analysis.

1.—0.1745 Gm. of material yielded 0.0964 Gm. of H_2O and 0.4352 Gm. of CO_2, corresponding to 6.13% H and 68.01% C.

2.—0.2023 Gm. of material gave 0.1182 Gm. of H_2O and 0.5036 Gm. of CO_2, corresponding to 6.49% H and 67.90% C.

3.—0.0990 Gm. of the platinic chloride double salt yielded by ignition 0.0161 Gm. metallic platinum, corresponding to 16.26% platinum.

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[1] PROCEEDINGS A. PH. A., 48 (1900), 132.

[2] *Compt. rend.*, 120 (1895), 1276.

[3] *Monatshefte für Chemie*, 19 (1898), 179.

[4] PROCEEDINGS A. PH. A., 48 (1900), 128.

The formula $C_{21}H_{23}NO_5$ requires C = 68.292%; H = 6.23%.
The formula $(C_{21}H_{23}NO_5.HCl)_2PtCl_4$ requires Pt = 17.00%.

From these data it is concluded that the base in question is *γ-homocheledonine.*

A few crystals were also separated mechanically which began to soften at 155° C. and were completely melted at 159–160° C. Although no analytical data were obtained the melting point shows that these crystals consisted of *β-homochelidonine.*

By repeatedly converting the larger part of the total alkaloids into hydrochloride and fractionating, then converting into free base, followed by repeated fractional crystallization from alcohol or a mixture of alcohol and acetic ether there was obtained a base which was white in the free state and also formed white salts. The melting point of the free base was 206–207° C.

An elementary analysis of this base gave the following results:

0.1731 Gm. of substance yielded 0.0925 Gm. of H_2O and 0.4292 Gm. of CO_2, corresponding to 5.93% H and 67.6% C. The formula $C_{20}H_{19}O_5N$ requires C = 67.98%; H = 5.38%.

These results show that the base in question is *protopine.*

Circumstances made it impossible to investigate these interesting alkaloids further, but the fact that there was present a considerable amount of a base which in the free state is white but which forms pale yellow salts is perhaps sufficient evidence to justify the conclusion that *chelerythrine* is also present.

SUMMARY.

The leaves of *Bocconia frutescens* L. contain at least four alkaloids. By elementary analysis and melting point determination two of these were identified as *γ-homochelidonine* and *protopine,* respectively.

A third one agrees in melting point with *β-homochelidonine.* Judging from the color (white) of the free base and the yellow color of its salts a fourth one is believed to be *chelerythrine.*

On account of the size of the leaves and their high alkaloidal content this plant is probably the best known source of protopine.

ALABAMA POLYTECHNIC INSTITUTE,
AUBURN, ALABAMA.

AMMONIUM ACETYL SALICYLATE "AMMON-ASPIRIN" $C_6H_4OCOCH_3COONH_4$.

BY NORMAN E. WOLDMAN, PH.D.*

In order to produce a new chemical for the drug trade that would give simultaneously the physiological effects of commercial Aspirin and Aromatic Spirit of Ammonia, work was begun on the preparation of the ammonium salt of aspirin, namely, ammonium acetyl salicylate. Commercial aspirin, it should be recalled, is acetyl salicylate. This new chemical, will when taken internally in five-grain

* Head of Department of Metallurgy and Chemistry, U. S. Naval Academy, Postgraduate School.

tablets dissociate readily into free ammonia and acetyl salicylic acid, thus giving simultaneously the physiological effects of commercial aspirin and aromatic spirit of ammonia.

Ammonium acetyl salicylate is most economically prepared from phenol as the base. From phenol the acetyl salicylic acid(1, 2, 3) is prepared and by its interaction with concentrated ammonium hydroxide solution the ammonium derivative is formed.

One hundred pounds of phenol, U. S. P grade, is melted in a standard phenol fusion kettle. One hundred and ten pounds of caustic soda solution, one pound sodium hydroxide to 1.5 pounds of water, previously prepared in a caustic pan, is then slowly added to the molten phenol and gently stirred; the reaction taking place forms sodium phenolate:

$$C_6H_5OH + NaOH \longrightarrow H_2O + C_6H_5ONa$$

The solution is evaporated to dryness in a stirred vacuum pan, or better in a vacuum drum dryer. The product must be completely dried. The dried sodium phenolate is charged into a stirred jacketed autoclave and carbon dioxide is run in slowly, keeping the temperature below 50° C. by water cooling. The carbon dioxide under pressure must be first dried by passing it through 66° Bé. sulphuric acid. This operation forms sodium phenol carbonate:

$$C_6H_5ONa + CO_2 \longrightarrow C_6H_5ONaCOONa + C_6H_5OH$$

In the same autoclave the carbon dioxide pressure is then raised to 125 pounds and the temperature is raised to 130° C. for six hours. This forms crude sodium salicylate:

$$C_6H_5ONaCOOH$$

The sodium salicylate is then purified by dissolving it in hot water, boiling the solution, and adding the following chemicals in succession: dilute sulphuric acid added to acidity, then 3% stannous chloride, then 1% aluminum, 4% carbon and finally sodium carbonate to neutrality. The impurities are thus removed, absorbed and adsorbed. The solution is filtered through a wooden filter press. To the clear filtrate dilute sulphuric acid (1:5) is added to precipitate the salicylic acid. The contents are cooled, contrifuged, and the crystals washed with cold water. The salicylic acid crystals are then dried on paper or cloth at not over 60° C.

The phenol used must be free from creosols. The salicylic acid can be recovered from the waste and wash liquors. A trace of iron will give the salicylic acid crystals a purple color. Consequently, the apparatus used in the manufacturing processes must not be of iron.

Acetyl salicylate can now be formed either from the salicylic acid just prepared or preferably from the sodium salicylate previously prepared after careful purification. Acetyl chloride is added to a hot saturated solution of the purified salicylic acid or its sodium salt and agitated. On cooling in crystallizers, acetyl salicylate crystallizes out in fine needles:

$$C_6H_4OHCOOH + CH_3COCl \longrightarrow C_6H_4OCOCH_3COOH + HCl$$

or

$$C_6H_4ONaCOOH + CH_3COCl \longrightarrow C_6H_4OCOCH_3COOH + NaCl$$

Fifty-seven pounds of acetyl chloride to one pound of salicylic acid or fifty pounds of acetyl chloride to one pound of sodium salicylate.

Acetyl salicylate is rather insoluble in cold water (one part in about one hundred parts of cold water) but very soluble in concentrated ammonium hydroxide. To sixty pounds of hot water (60° C.) in a mixer having a strong agitator drive forty pounds of concentrated ammonium hydroxide (94%) is added and then one hundred pounds of acetyl salicylate is added with vigorous stirring. There is a large heat evolved in the solution and reaction, and the crystals will tend to cake if the acetyl salicylate crystals are not added slowly with vigorous agitation of the solution. The crystals will go completely into solution on strong agitation forming a slight yellowish red syrupy liquid. On cooling in a crystallizer fine prismatic crystals of ammonium acetyl salicylate settle out. The contents are placed in a centrifuge basket and centrifuged. The crystals are washed with a little cold water containing some ammonium hydroxide to prevent hydrolysis and dried with blotting paper or on cloth at not over 50° C.

$$C_6H_4OCOCH_3COOH + NH_4OH \longrightarrow C_6H_4OCOCH_3COONH_4 + H_2O$$

or

$$C_9H_8O_4 + NH_4OH \longrightarrow C_9H_{11}O_4N + H_2O$$

The mother liquor from the centrifuge is evaporated down to saturation in a vacuum evaporator at a high vacuum and placed in a crystallizer for a second crop of acetyl ammonium salicylate crystals. The contents are again centrifuged and the crystals dried as before. This process of evaporating down to saturation of the mother liquor is continued in the same fashion until most all of the acetyl ammonium salicylate crystals has separated out.

In the last stage of the commercial preparation of Ammon-Aspirin, where acetyl salicylate is dissolved in the ammonium hydroxide solution, care must be taken in not adding a greater proportion of ammonium hydroxide then specified, for greater difficulty will then be encountered in crystallizing out the salt, due to the great solubility of acetyl ammonium salicylate in ammonium hydroxide.

Ammonium acetyl salicylate will decompose at temperatures above 70° C. liberating ammonia and hydrolyzing the acetyl group to acetic acid. Consequently the mother liquors from the crystallization cannot be evaporated in atmospheric evaporators at elevated temperatures, but only in high vacuum evaporators. Great care must also be taken in not permitting any water to be added to the ammoniacal ammonium acetyl salicylate solutions as dilution with water causes salicylic acid to precipitate out.

Ammonium acetyl salicylate is difficultly soluble in cold water, more readily soluble in hot water, soluble in cold alcohol and very soluble in ammonium hydroxide. It is a white crystalline compound and decomposes at temperatures above 70° C. into acetyl salicylate, salicylic acid and phenols. The acetyl radical hydrolyzes readily into acetic acid leaving an hydroxyl radical in its place on the phenyl group. In alkaline solutions it dissociates readily into acetyl salicylate and free ammonia, the ammonia forming ammonium hydroxide with the alkali.

Ammonium acetyl salicylate is practically odorless and has a slight sour taste. Due to the alkalinity of the intestines ammonium acetyl salicylate disso-

ciates when taken internally into acetyl salicylate (aspirin) and ammonia. A five-grain tablet of this compound will yield on complete dissociation in the intestines 4.5 grains of aspirin and 0.5 grains of free ammonia or 1.0 grain of ammonium hydroxide. The ammonium ion acts as a counterirritant and as a stimulant. By the liberation of this volatile and diffusible ammonia the action of this ammonium compound extends deeply. The ammonia is absorbed by the system and is converted into urea.

Ammon-Aspirin is non-poisonous. It can be taken internally with the same ease as ordinary aspirin. The proper dose is in 5-grain tablets. It has the same effect on the human system as a mixture of ordinary aspirin and aromatic spirits of ammonia, or free ammonium hydroxide in the same proportions. It has the advantage of being a simple white crystalline compound containing both aspirin and ammonia in combination. If desired to increase the ammonia content of each tablet for greater effect on the central nervous system a little ammonium carbonate can be added to the ammonium acetyl salicylate before the tablets are made up.

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(2) Dammar, *Chem. Tech. der Neuzeit*, 1, 683.
(3) *Chemical Age*, 1, 79.
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BIOASSAY OF ACONITE AND ITS PREPARATIONS. I. LETHAL DOSE OF ACONITINE TO RATS.*

J. C. MUNCH[1] AND G. S. GITTINGER.[2]

The bioassay of aconite and its galenical preparations has been proposed by a number of investigators since Squibb (8), in 1882, proposed the determination of the minimum concentration just capable of producing the characteristic tingling of the human tongue when held in the mouth for 5 to 10 minutes. Taylor (12) showed the quantitative possibilities of the method, but other investigators have not been favorably impressed, claiming that the personal equation plays too great a part in the assay results. A series of publications from Haskell's laboratory (2) discuss the seasonal variation of guinea-pigs and develop a modification of the Hatcher cat method used for the assay of digitalis, which is claimed to give consistent results in the biosasay of aconite. Jauregui (4), in a critical study of various bioassay methods for aconite, presents a few data to substantiate his belief that more consistent results may be obtained with cats under artificial respiration, although the guinea-pig method of bioassay, originally proposed by Githens and Vanderkleed (1), is also considered reliable. Roth (6) found that the guinea-pig method was more satisfactory than the Squibb test. Various factors affecting the

* A preliminary report of the results obtained in this investigation was presented at the meeting of the Scientific Section of the AMERICAN PHARMACEUTICAL ASSOCIATION held in St. Louis, Mo., in August 1927.

[1] Resigned from the Government service January 1, 1928.

[2] Resigned from the Government service August 1928.

accuracy of the guniea-pig method were studied by Swanson and coworkers (9, 10, 11), and data which indicate that there is no definite seasonal variation of guinea-pig susceptibility to aconitine were presented. U. S. Pharmacopœia X officially adopted the guinea-pig method of bioassay for aconite and its preparations (13). This method may be summarized to read: "Two out of three guinea-pigs weighing between 275 and 325 Gm. will die within 12 hours after the subcutaneous injection of a specified quantity of aconite preparation." For aconitine the specified fatal dose is 0.060 mg./Kg.

Because of the cost of guinea-pigs and the occasional difficulty of obtaining an adequate supply of animals of the proper weight, Rowe (7) developed an assay method by which intraperitoneal injections of solutions are given to white mice weighing about 20 Gm. The fatal dose of aconitine for mice was 0.5 mg./Kg., and 0.080 mg./Kg. for guinea-pigs by the U. S. Pharmacopœia X method; 6.25 times as much aconitine was required to kill mice as to kill guinea-pigs, and Rowe recommended this figure as a factor for comparison of results by these methods. In a later study of this method, Swanson and Hargreaves (11) found that aconite preparations complying with the pharmacopœial requirements for potency gave comparable results by the two methods, but that the factor 10 was indicated. With weaker preparations the factor decreased progressively to 3. Swanson and Hargreaves suggest that this may be due to the greater susceptibility of mice to the alcohol in the test solution.

White rats are cheap and readily available and are commonly employed in pharmacological laboratories for a number of tests. We have studied the possibility of using them for the assay of aconite preparations, believing that they possess advantages over mice. To avoid various complications these experiments were conducted with a solution of U. S. P. aconitine, crystalline, Merck. Tested by the U. S. P. X guinea-pig method, the fatal dose was found to be 0.060 mg./Kg.

All rats used in these experiments had been held in the laboratory for at least a month. They were fed upon the same diet and were stored under the same conditions. Most of them weighed between 150 and 200 Gm. Some had received other drugs prior to use; others had not. No differences in reaction could be noted, and no other drug had been given within a period of several weeks. Subcutaneous injections were made by the U. S. P. X guinea-pig technic. For intraperitoneal injections 0.3 to 0.6 cc. of solution was injected from a 1-cc. Luer syringe through a small needle, care being taken to prevent loss of solution at the site of injection. Observations were made at frequent intervals after injection, to determine the rapidity of onset of symptoms and the time until death. All deaths occurring after typical aconite symptoms, and within 12 hours of injection, were attributed to aconitine.

The results obtained in the several series of tests are reported in Tables I, II and III. The numerator of the fraction in each entry represents the number of animals that died; the denominator represents the total number of animals injected with the indicated dose. As no consistent differences were detectable in the several series of experiments conducted at various periods throughout the year, the results obtained in each series have been consolidated, and the percentage of injected animals dying after each dose has been determined.

TABLE I.—FATAL DOSE OF ACONITINE TO WHITE RATS—SUBCUTANEOUS SINGLE INJECTION.

	Dose injected (mg./Kg.).							
Series.	0.08.	0.10.	0.12.	0.15.	0.175.	0.20.	0.25.	0.30.
1	..	0/1	...	0/2	...	0/2	3/3	2/2
2–7	..	9/106	4/10	9/24	...	...	..	...
14–21	0/25	2/50	17/50	17/25	16/25	24/25	...	...
22	..	3/5	4/5	5/5	5/5	5/5	...	...
23–25	..	4/56	...	...	...	...	...	...
Total	0/25	18/218	25/65	31/56	21/30	29/32	3/3	2/2
Deaths (%)	0	8	39	55	70	91	100	100

TABLE II.—FATAL DOSE OF ACONITINE TO WILD RATS—SUBCUTANEOUS SINGLE INJECTION.

	Dose injected (mg./Kg.).					
Series.	0.14.	0.16.	0.18.	0.20.	0.22.	0.24.
26	3/9	9/15	3/6	5/8	19/20	2/2
Deaths (%)	33	60	50	62	95	100

TABLE III.—FATAL DOSE OF ACONITINE TO WHITE RATS—INTRAPERITONEAL SINGLE INJECTION.

	Dose injected (mg./Kg.).			
Series.	0.05.	0.06.	0.075.	0.10.
8–10	0/6	0/11	...	4/6
11–13	0/6	..	1/3	2/2
Total	0.12	0/11	1/3	6/8
Deaths (%)	0	0	33	75

The reactions of 431 white rats following a single injection of aconitine subcutaneously are given in Table I. The great variation in susceptibility of individual rats is readily apparent. Eighteen rats were killed by a dose of 0.10 mg./Kg., while 3 rats survived a dose twice as large. To kill all rats 0.25 mg./Kg. was required. Using the U. S. P. X criterion (that dose which kills 2 out of 3 animals within 12 hours), however, the fatal dose for white rats was found to be 0.175 mg./Kg. The fatal dose for guinea-pigs having been found to be 0.069 mg./Kg. our experiments show that 3 times as much aconitine is required to kill white rats as to kill guinea-pigs, when the aconitine is subcutaneously injected into each species.

The reactions of 59 wild (gray) rats, weighing 100 to 400 Gm., to subcutaneous injections of aconitine, are given in Table II. The fatal dose appears to be about 0.20 mg./Kg., which is somewhat greater than the fatal dose for the white rats. The small number of animals studied, however, does not warrant too close a comparison of the susceptibilities of the two species. Wild rats were not obtainable in sufficient numbers to determine whether this observed difference in susceptibility is apparent or real. The dose killing all wild rats was essentially identical with the dose killing all white rats.

The intraperitoneal injection of aconitine in 34 rats gave the results in Table III. Too few animals were employed to permit great accuracy, but it appears that the fatal dose of aconitine is approximately 0.10 mg./Kg., somewhat more than half the fatal dose by subcutaneous injection.

VARIATIONS IN SUSCEPTIBILITY OF INDIVIDUAL RATS.

The results in Tables I, II and III show the variation in susceptibility of rats to a single injection of aconitine. The percentage of deaths increases as the dose

is increased. The most resistant rats required more than twice as large a dose to kill as the most susceptible ones. A further study of the variation in sensitivity was undertaken by a different method. All the rats of a given series were injected with the same dose of aconitine. After an interval of 2 days or 4 days all of the survivors were injected with a larger and larger dose, until all the rats in a given series were killed.

TABLE IV.—FATAL DOSE OF ACONITINE TO WHITE RATS—SUBCUTANEOUS REPEATED INJECTIONS.

(Interval between injections, 4 days.)

Series.	No. rats.	Increment.	Dose causing death (mg./Kg.). 0.08.	0.10.	0.125.	0.15.	0.175.	0.20.	0.22.	0.25.
2	23	0.025	..	..	..	9	11	3	...	...
3	10	0.025	..	..	4	4	..	2	...	...
4	13	0.025	..	1	1	6	1	2	2	...
5	27	0.025	..	3	9	6	4	2	3	...
6	19	0.025	..	2	3	2	8	3	1	...
7	46	0.025	..	3	12	8	17	6	...	...
Total	138	...	..	9	29	35	41	18	6	...
Deaths (%)			..	7	28	53	83	96	100	...
(Interval between injections, 2 days.)										
14	25	0.050	..	..	..	..	..	24	...	1
15	25	0.025	..	..	..	..	16	3	...	6
16	25	0.075	..	..	5	..	..	19	...	1
17	25	0.075	..	1	..	..	24	..	...	...
18	25	0.075	..	1	..	..	24	..	...	...
19	25	0.075	0	..	..	22	3	..	...	...
20	25	0.025	..	..	..	17	6	2	...	...
21	25	0.025	..	..	12	5	8	..	...	...
Total	200		0	2	17	44	81	48	...	8
Deaths (%)			0	1	10	32	72	96	...	100

TABLE V.—FATAL DOSE OF ACONITINE TO WHITE RATS—INTRAPERITONEAL REPEATED INJECTIONS.

(Interval between injections, 4 days.)

Series.	No. rats.	Increment.	Dose causing death (mg./Kg.). 0.05.	0.06.	0.07.	0.08.	0.09.	0.10.	0.11.	0.12.	0.16.
8	6	0.02	...	...	...	...	...	4	...	2	...
9	6	0.01	0	...	2	2	0	0	1	..	1
10	11	0.01	...	0	8	0	2	1	...	...	...

Subcutaneous injections in Series 2–7 (Table IV) were made with an increment of 0.025 mg./Kg. of aconitine in successive doses. The lowest dose given, 0.10 mg./Kg., was fatal to 9, or 7 per cent, of the 138 rats used. After 4 days the remaining 129 rats were injected with a dose of 0.125 mg./Kg., causing the death of 29 more rats, or 21 per cent of the original 138 rats of the series. As the rats which died at the 0.10 mg./Kg. dose would also have been killed if they had received 0.125 mg./Kg., the cumulated mortality is taken as the sum of 7 per cent and 21 per cent, or 28 per cent. At 0.175 mg./Kg., the dose selected as the fatal dose (killing two-thirds of the animals injected), it was found that 83 per cent of the series had died.

Reducing the time-interval between injections to 2 days, 200 rats in Series 14–21 were injected (Table IV). The increments were varied from 0.025 to 0.075

mg./Kg. in the different series. Somewhat smaller perentages of animals were killed by the lower doses than in the group with 4-day intervals. However, 0.175 mg./Kg. killed 72 per cent of all the rats injected.

Using a 4-day interval, 23 rats in Series 8–10 were given intraperitoneal injections with similar increases in dosages (Table V). The same results were evident. The dose of 0.10 mg./Kg., which killed 75 per cent of the rats after a single injection, killed 83 per cent in this series of increased dosages. Too close comparisons are not justified on account of the small number of animals studied.

TABLE VI.—CUMULATIVE TOXICITY OF ACONITINE TO WHITE RATS—PERCENTAGE OF DEATHS.

Method of injection.	No. rats.	Dose injected (mg./Kg.).								
Subcutaneous:		0.08.	0.10.	0.125.	0.15.	0.175.	0.20.	0.22.	0.25.	
Single	431	0	8	39	55	70	91	...	100	
4-day interval	138	..	7	28	53	83	96	100	...	
2-day interval	200	0	1	10	32	72	96	...	100	
Intraperitoneal:		0.05.	0.06.	0.07.	0.075.	0.08.	0.09.	0.10.	0.11.	0.12.	0.16.
Single	34	0	0	..	33	..	..	75	..	..	...
4-day interval	23	0	0	44	..	52	61	83	87	96	100

TABLE VII.—DETOXICATION OF ACONITINE BY WHITE RATS—SUBCUTANEOUS INJECTIONS AT 8-HOUR INTERVALS.

Series.	No. rats.	No. doses.	Total aconitine to kill, mg./Kg.	Detoxicating power (mg./Kg./8 hours.)	
23	3	1	0.10	None	
	5	2	0.15	None	
	2	3	0.20	0.0125	
	3	4	0.25	0.025	
	11	5	0.30	0.031	
24	2	3	0.30	0.0625	
	1	4	0.40	0.075	
	5	5	0.52	0.086	
25	1	1	0.10	None	
	23	2	0.22	0.045	
Weighted average					0.037

TABLE VIII.—DETOXICATION OF ACONTINE BY WHITE RATS—INTRAPERITONEAL INJECTIONS AT 1-DAY INTERVALS.

Series.	No. rats.	No. doses.	Total amount aconitine to kill, mg./Kg.	Detoxicating power (mg./Kg./day).	
11	1	3	0.15	0.025	
	1	8	0.40	0.043	
	1	11	0.575	0.0475	
	1	16	1.00	0.060	
	1	18	1.20	0.065	
12	1	1	0.075	None	
	2	Over 4	Over 0.30	Over 0.067	
13	1	2	0.20	None	
	1	4	0.40	None	
Weighted average					0.037

The results of single and of repeated injections of aconitine subcutaneously and intraperitoneally to white rats are consolidated in Table VI. Although slight differences in the percentages of animals killed at the increasing dosages may be noted, the fatal doses by each method of injection are found to be in substantial agreement. An ogee curve (Fig. 1) shows the results obtained in the subcutaneous injections. From this curve the relative susceptibility for the animals used may be discerned. The 67 per cent axis intersects the three ogee curves at 0.162, 0.170 and 0.172, values in substantial agreement with the fatal dose of 0.175 which was selected. As the experimental results did not correspond to the usual types of frequency curves, further mathematical analyis was not attempted.

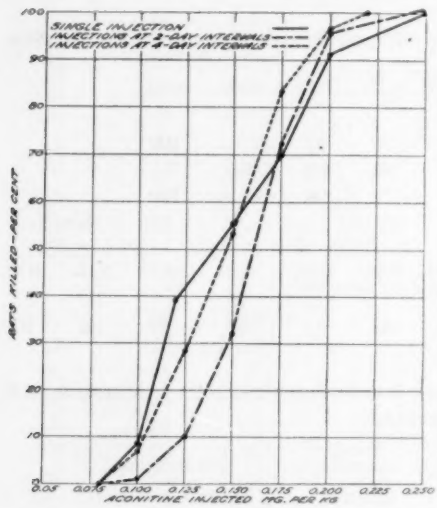

Fig. 1.

RATE OF DETOXICATION OF ACONITINE BY WHITE RATS.

As the fatal dose of aconitine was essentially the same in rats receiving injections at 4-day and at 2-day intervals and in rats which had not received aconitine previously, it was decided to follow the rate of destruction (or elimination) of aconitine in the living rat by changes in the fatal dose. Palet (5) found that aconitine is qualitatively detectable several months after death, when chemical analyses are made of the rat's tissues. Hottinger (3), injecting aconitine solutions intravenously into cats, demonstrated that aconitine action was the result of the two variables, time and concentration, and estimated the destruction in the cat's tissues to be between 0.004 and 0.0008 mg./Kg./min. Assuming a constant rate, intravenously injected aconitine is detoxicated by the cat at the rate of between 0.24 and 0.048 mg./Kg./hour.

Three series of subcutaneous injections were made, and the detoxicating power of the living rat's tissues was calculated. Injections were made at 8-hour intervals into all survivors of a series. To calculate the detoxicating power, it was assumed that the fatal dose would be 0.175 mg./Kg. for each rat, and that a rat would die as soon as that quantity of aconitine was actively present. In Series 23, 3 rats died at 0.10, and 5 at 0.15 mg./Kg., doses below the fatal dose. These animals apparently were overly sensitive, although some deaths at doses below 0.175 mg./Kg. are to be expected. Two rats were killed by a total quantity of 0.20 mg./Kg., given in 3 injections. As 0.175 mg./Kg. is necessary to kill, the rats must not have detoxicated more than the difference between the total quantity injected, 0.20 mg./Kg., and the fatal dose, 0.175 mg./Kg., or a total of 0.025 mg./Kg., during the two 8-hour periods between the original and the final injection. The detoxicating power of these two rats, then, was 0.025/2, or 0.0125 mg./Kg. in 8 hours. Of course, it is recognized that there might be more than 0.175 mg./Kg. of aconitine in the rat at the time of death, so that this figure for detoxication is probably a maximal value. Using this method, the values for detoxicating power given in the last column of

Table VII were calculated. The weighted mean value for detoxicating power was found to be 0.0376 mg./Kg. during 8 hours, which is approximately 22 per cent of the fatal dose. Assuming a constant rate, subcutaneously injected aconitine is detoxicated by the rat at the rate of 0.0047 mg./Kg./hour.

In a similar series of intraperitoneal injections (Table VIII) the same variations in sensitivity were obtained. Two rats were injected with 0.10 mg./Kg., the fatal dose by this method of injection. One rat died on the second, the other on the fourth day, after daily injections. The other animals showing detoxicating powers ranging from 0.025 mg./Kg. to 0.067 mg./Kg. per day. The weighted average value was found to be 0.037 mg./Kg./day, or 37 per cent of the fatal dose. Assuming a constant rate, intraperitoneally injected aconitine is detoxicated by the rat at the rate of 0.0015 mg./Kg./hour.

These results indicate that the rat is capable of detoxicating a fatal dose of aconitine in 3 to 4 days, and that survivors from the injection of an aconitine solution may be used safely for the assay of another preparation after that time. As a precaution, however, it would appear advisable to include a number of unused rats with the ones that are used again.

CONCLUSIONS.

The fatal dose of aconitine (killing 2 out of 3 animals), when injected subcutaneously into white rats by the U. S. P. X method, is 0.175 mg./Kg. Wild rats are equally or somewhat less susceptible.

Injected intraperitoneally the fatal dose is 0.10 mg./Kg. Subcutaneous injections appear more reliable than intraperitoneal injections. Great variations in susceptibility of individual rats make it necessary to use a number of test animals. Surviving rats may be used again after 4 days.

Assuming a constant rate of detoxication of aconitine in terms of mg./Kg. per hour, white rats detoxicated 0.0047 mg. after subcutaneous injection, and 0.0015 mg. after intraperitoneal injection.

For the preliminary assay of aconitine, and presumably of aconite preparations, readily available white rats may be used to conserve the more expensive guinea-pigs.

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Pharmacological Laboratory,
Food, Drug and Insecticide Administration,
U. S. Department of Agriculture,
Washington, D. C.

A CHEMICAL STUDY OF THE RIND OF CALIFORNIA ORANGES.*,[1]

BY MARION BROOKS MATLACK.

The material used in the following investigation was collected daily from the Wisconsin General Hospital during a period covering about six weeks. The material consisted of the residue left after halved orange had been extracted with a revolving bur. The oranges were all California Valencias. The inner membranous material or "rag" was removed thus leaving only the rind. The rind was then dried over a radiator until brittle and ground in a food chopper. It was then placed in a large galvanized iron percolator and immediately covered with 95 per cent alcohol. Thus it was allowed to stand for some time and then the alcohol was drawn off; 33–36 liters at a time. The alcohol was recovered by distillation using a copper steam jacketed still. The residue remaining was drawn off into a flask and kept until all had been collected. The alcohol was returned to the percolator, and the process repeated until the residue from about two hundred liters of alcoholic percolate had thus been obtained.

The material was a dark brown to black liquid from which some solid matter separated out. This material was then steam distilled to remove volatile oil. The fixed oil separated on top of the aqueous layer in the distillation flask and was colored black by pigment.

The fixed oil which had thus separated out was removed by dissolving it in petroleum ether. After the petroleum ether had been evaporated off there remained a very dark almost black liquid residue.

The aqueous material remaining after removal of both volatile and fatty oil, was evaporated to a thick viscous consistency over a radiator and set aside until desired for use.

In this manner the following materials for further work were obtained:

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* Part of a thesis submitted for the degree of Doctor of Philosophy, University of Wisconsin, 1928.

[1] Presented before Scientific Section, A. Ph. A., Portland meeting, 1928.

1. The volatile oil obtained by steam distillation from the alcoholic extract.
2. Fatty oil and similar material soluble in petroleum ether which had separated from the aqueous liquid after steam distillation of the alcoholic extract in order to separate the volatile oil.
3. The residual alcoholic extract deprived of volatile oil, also of fatty and resinous material, soluble in petroleum ether, resulting after evaporation of the accumulated water.

ISOLATION OF HESPERIDIN.

In the process of extraction of the fat, which floated on top of the aqueous liquid after removal of the volatile oil by steam distillation, a quantity of brownish solid was noticed floating under the petroleum ether layer. This material appeared to be almost crystalline in some cases and in others a black tarry mass. The material which was nearly crystalline was washed with alcohol until light in color. A small quantity was recrystallized from alcohol. This had a melting point of 251° and was soluble in dilute alkali with a light yellow color, and could be precipitated by acids from this solution.

The black resinous mass was treated with boiling alcohol and filtered. There remained on the filter a substance which when dry melted at 250° without further purification. It was also soluble in dilute alkali and was concluded to be the same as the above, *viz.* hesperidin.

The alcoholic filtrate from the impure glucoside was mixed with ether which precipitated a brown solid. Petroleum ether produced still more precipitate. At least part of this brown material appears to belong to that ill-defined group of substances known as resins.

SAPONIFICATION OF THE FAT AND SEPARATION OF THE SATURATED FROM THE UNSATURATED FATTY ACIDS.

The petroleum ether was removed from the fat by distillation. To it were added fifty per cent aldehyde-free alcohol and an excess of potassium hydroxide (as determined by saponification). The saponification of the fat was carried out on a water-bath under a reflux condenser for a period of three hours. The alcohol was removed by distillation and more water added. Next the soaps were extracted with ether until the extract had only a faint yellow color. This ethereal extract was reserved for the examination for unsaponifiable constituents.

The aqueous soap solution was acidified with dilute sulphuric acid and the resulting mixture extracted with ether in order to obtain the fatty acids. The aqueous solution remaining was reserved for examination for glycerol.

In order to separate the saturated fatty acids from those which were unsaturated, use was made of the lead salt-ether method of Varrentrap. Some of the lead salt separated out as small brown lumps and some as a flocculent white precipitate. The lead soaps were extracted with ether twice and the mixtures filtered. Both the soluble and the insoluble lead soaps thus obtained were treated with dilute hydrochloric acid in order to regenerate the original fatty acids. The liberated acids were dissolved in ether, the solutions dried over anhydrous sodium sulphate and reserved for further examination as described below.

EXAMINATION OF THE UNSATURATED FATTY ACIDS.

The unsaturated fatty acids were examined by the bromination method as given by Lewkowitsch.[1] The fatty acids were dissolved in ether containing a small amount of glacial acetic acid, the solution cooled to 5° and a solution of bromine in acetic acid (1:1) was added until a slight excess of bromine was present. A precipitate settled out before the operation was concluded. The solution and solid were allowed to stand over night at a freezing temperature. The precipitate was filtered off and washed with ether until practically white. The dried substance melted at 182°. After recrystallization from benzene the m. p. rose to 183° C.

The filtrate was nearly freed from ether and poured into two liters of distilled water. A solid separated out which was yellowish brown in color and appeared almost crystalline. This solid was washed with water in order to remove any excess of acetic acid and bromine, allowed to dry, then dissolved in ether and the ethereal solution dried over anhydrous sodium sulphate. The solvent was removed by distillation and the residue extracted with a large volume of petroleum ether. On cooling to about —10° a flocculent precipitate settled out. This was redissolved in boiling petroleum ether and on cooling came out with a light yellow color. To the ethereal solution thereof petroleum ether was added until precipitation just started, the mixture then set outside where the temperature was about —10° C. and allowed to stand over night. Pearly white crystals settled out which had a m. p. of 113–114°.

The petroleum ether solution from which the first lot of crystals had been separated, was evaporated leaving a light brown oily residue.

The bromine content of the two solids obtained was determined by the method of Stepinow.[2] The average of two determinations on the solid melting at 183° was 63.46 p. c. Calculated for linolenic hexabromide 63.3 p. c. The acid present was therefore linolenic acid. The average of the two bromine determinations on the solid melting at 113–114° was 53.15 p. c. Calculated for linolic tetrabromide 53.27 p. c. The acid present is therefore linolic acid. Corrections were made for the chlorine content of the sodium used.

The light brown oily residue mentioned above was debrominated by means of twenty mesh zinc in order to obtain the free acid. On the free acid an iodine number determination was made. The average of two determinations was 95.4. Calculated for oleic acid 90.07. There was therefore probably some isolinolic acid present as has been found to be the case in several instances.

A drop of the above oily brown liquid dissolved in a few cc. of concentrated sulfuric acid gave a deep violet ring when a dilute alcoholic solution of vanillin was superimposed. On shaking, the color spread throughout the liquid.

A positive elaidin test was obtained.

The acid present may be concluded to be oleic acid.

EXAMINATION OF SOLID FATTY ACIDS.

Systematic fractional crystallization was resorted to and nine fractions were collected. Those fractions having the same melting range were combined. This

[1] Lewkowitsch, 6th Edition, I, 581.

[2] *Ber.*, 39 (1906), 4056; Kamm. Qual. Org. Anal., 168.

gave two lots of material one which crystallized readily and gave a good granular precipitate, melting at from 57–58° to a turbid liquid which cleared at 59°; and another which crystallized in flocks and dried to a leathery mass which melted at 66–68°. Its silver salt melted below 100° and the potassium salt was insoluble in cold water. Stephan[1] found evidence of cerotic acid in the residue left after distillation of sweet orange oil.

A silver salt was made of the first substance and the percentage of silver determined.

0.1330 Gm. of the unknown gave 0.0386 Gm. Ag	= 28.8 p. c.
0.0877 Gm. of the unknown gave 0.0252 Gm. Ag	= 28.7 p. c.
Average	= 28.75 p. c.
Silver palmitate contains	29.7 p. c.
Silver stearate contains	27.6 p. c.

Since the per cent of silver in the unknown is almost exactly half way between that of the two salts, it would indicate that the unknown is a mixture of approximately fifty-fifty palmitic and stearic acids. The melting point also corresponds to that given for a 50 per cent mixture of palmitic and stearic by Lewkowitsch.

ISOLATION OF GLYCEROL.

The aqueous liquid from which the fatty acids had been liberated by dilute sulphuric acid was exactly neutralized with sodium carbonate. This solution was evaporated until nearly dry and crystals of sodium sulphate had separated. These were filtered off and the mother liquor evaporated down still further and the residue extracted with alcohol containing a small amount of ether. The alcoholic solution thus obtained was allowed to evaporate over a radiator. A brown viscous residue was left which was dissolved in water. Basic lead acetate was added in excess and the precipitate filtered off. The excess lead was removed from the filtrate by hydrogen sulphide, and the filtered liquid was boiled with animal charcoal and again filtered. This gave a clear light yellow liquid. The water was evaporated off and the light brownish, viscous residue was tested as follows:

1. A small amount was dissolved in a dilute copper sulphate solution and sodium hydroxide added. A clear deep blue solution was obtained.

2. Some of the material was heated with potassium bisulphate and the evolved gases absorbed in water. This solution was found to reduce the reagent named above under 1, Fehling's solution and ammoniacal silver nitrate solution. The gases evolved during heating had the odor of acrolein. The presence of glycerol can, therefore, be concluded as proved.

IDENTIFICATION OF A PHYTOSTEROLIN.

When the fatty acids from the soap had been liberated by dilute sulphuric acid and the organic acids extracted with ether, a brownish colored solid was noticed floating next to the ether layer. After the extraction was complete the aqueous layer was drawn off and the brownish solid separated; NaOH solution was added to the moist solid with the hope of getting it into solution. The brown color dissolved and left a white voluminous solid which partly floated on and partly sank in the solution. The solution was deep brown to black in color. The white precipitate

[1] J. Stephan, *Journ. prakt. Chem.*, 170 (1900), 523.

was filtered off and dried. The brown to black colored solution was acidified with dilute sulphuric acid and a voluminous brown precipitate separated out. This was washed by decantation until free from acid and then filtered off and dried. It appeared like a shiny black resin. It has not been examined further.

The crude white solid was found to have a melting point of 271–273°. It was slightly soluble in boiling alcohol from which it separated on cooling. It was not, however, crystalline. This purified material melted at 271°. A small amount was crystallized from diacetone alcohol from which it came out in granules melting at 271–273°. Crystallization from dilute aqueous pyridine gave microscopic needles melting at 280°. It was found that the material gave a carbohydrate test with α-napthol and concentrated sulphuric acid but did not reduce Fehling's solution. Positive phytosterol color reactions were obtained (Salkowski and Liebermann-Burchard).

A benzoyl and an acetyl derivative were prepared. The former was made by dissolving a small amount of the material in pyridine and warming this solution with benzoyl chloride. After crystallizing once from a mixture of chloroform and alcohol and twice from alcohol it gave a melting point of 198°. The latter derivative was prepared by heating in acetic anhydride for one-half hour at a temperature sufficient to boil the acetic anhydride. After evaporation of the anhydride and two crystallizations from alcohol the crystals melted sharp at 164–164.5°.

One-half gram of the original material was hydrolyzed by the method of Power and Salway.[1] To the material dissolved in amyl alcohol aqueous hydrochloric acid was added and then sufficient ethyl alcohol to produce a homogeneous liquid. The mixture was heated for two hours under a reflux condenser. The amyl alcohol was then removed by steam distillation. There remained in the distilling flask a white solid floating in an aqueous solution. The solid was removed by filtration and crystallized three times from ethyl acetate-alcohol mixture. Large leaf-like, flaky crystals were obtained which melted at 136–136.5°. Their acetyl derivative formed leaf-like crystals, which, when crystallized from ethyl acetate-alcohol mixture, melted at 124.5–125°. The white solid obtained by the above hydrolysis gives both the Salkowski and Liebermann-Burchard reactions for sterols.

The aqueous solution reduces Fehling's solution and gives an osazone which, after two crystallizations from 60 p. c. ethyl alcohol, has a melting point of 204° with very little charring.

The above-mentioned properties agree quite closely with those of synthetic phytosterol-*d*-glucoside prepared by Salway[2] and with the natural phytosterolins found by others *i. e.*, Power & Salway's Ipuranol from *Ipomoea purpurea*.[3]

PLANTS IN WHICH PHYTOSTEROLINS ARE KNOWN TO EXIST.

Reference.		Substance, m. p.	Acetate, m. p.
(1)	*Ipomoea purpurea*	290–295°	160°
(1)	Colocynth (Appears to be identical with material from *Euonymus atropurpureas* and *Caulophyllum thalictroides*)	285–290°	167°
(1)	Bryony root	210–212°	152°

[1] *Chem. Soc. J. Trans.*, 103 (1913), 399.
[2] *Ibid.*, 103 (1913), 1022.
[3] *Ibid.*, 103 (1913), 399.

(1)	Taraxacum root (Appears to be identical with material from *Cluytia similis*)	297°	161°
(2)	Hops	285–290°	167–168°
(3)	Senna leaves	290°	163°
(4)	*Smilax ornata* Hooper	280–285°	.....
(5)	*Solanum angustifolium*	300°	168–169°
(6)	*Anthemis nobilis* L.	280–283°	159–160°
(7)	*Clematis vitalba* L.	195°	149°
(8)	*Matricaria chamomilla* L.	285°	158–160°
(9)	*Gloriosa superba*	293°	163°
(10)	*Euphorbia pilulifera*	297°	161–162°
(11)	*Phaseolus multiflorus*	275°	162°
(12)	*Dicoma anomala*	260–270°	150°
(13)	*Brauneria (Echinacea) angustifolia*	280–290°	163–164°
(14)	*Ferrula sumbul* before	260–270°	
	after crystallization	290°	159–160°
(15)	*Syzygium jambolina*	275–285°	167–168°
(16)	*Adonis vernalis*	275–285°	167–168°
(17)	*Viburnum prunifolium*	290°	168°
(18)	Cotton plant	218–223°	165–166°
(19)	Synthetic phytosterol-*d*-glucoside, sitosterol-*d*-glucoside)	295–300°	166–167°
	Benzoyl derivative	198°	

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(1) *Chem. Soc. J. T.*, 103 (1913), 399.
(2) *Ibid.*, 103 (1913), 1267.
(3) *Ibid.*, 103 (1913), 2006.
(4) *Ibid.*, 103 (1913), 201.
(5) *Ibid.*, 105 (1914), 559.
(6) *Ibid.*, 105 (1914), 1829.
(7) *Ibid.*, 105 (1914), 1845.
(8) *Ibid.*, 105 (1914), 2280.
(9) *Ibid.*, 107 (1915), 835.
(10) *Pharm. J.*, 90 (4), 36 (1913), 506.
(11) *Ibid.*, (4) 36 (1913), 550.
(12) *Ibid.*, (4) 36 (1913), 694.
(13) *J. Am. Chem. Soc.*, 37 (1915), 1769.
(14) *Ibid.*, 38 (1916), 432.
(15) *Ibid.*, 38 (1916), 2805.
(16) *Ibid.*, 40 (1918), 436.
(17) *Ibid.*, 42 (1920), 1744.
(18) *Ibid.*, 48 (1926), 2721.
(19) *Chem. Soc. J. T.*, 103 (1913), 1022.

ISOLATION OF TWO PHYTOSTEROLS.

The unsaponifiable material which had been obtained from the soap by extraction with ether was dissolved in petroleum ether. Methyl alcohol was added in large volume with the hope of producing a precipitate but none appeared. Sufficient water was then added to the solution to dilute the methyl alcohol to a concentration of eighty per cent. The solution separated into two layers. A solid crystalline substance settled out in both layers and that from each layer was collected separately. After repeated recrystallization from alcohol-ethyl acetate mixture they were found to melt at 139–139.5° and to give an acetyl derivative which after repeated crystallization from alcohol-ethyl acetate solution melted at 128°. The free alcohol gave the Liebermann-Burchard and Salkowski color reactions for sterols.

The second phytosterol was obtained from the combined filtrates from the crystallization of the first sterol and crystallized in needles instead of the plates quite common to phytosterols. This second phytosterol is more soluble in alcohol than is the first. After repeated crystallization from alcohol it gave a melting point of 150°. From this an acetyl derivative was formed which melted at 113.5°–

114°. These crystals appeared as flat colorless needles. Since phytosterols with the above melting point are not so common as others in plants, it was thought desirable to make a benzoyl derivative. After repeated crystallization this melted at 143°. It crystallizes in colorless leaflets. In the melting points of the sterol and its benzoyl derivative there is complete correspondence with the paraphytosterine of Likiernik[1] obtained from the seed coats of *Phaseolus vulgaris*. He did not prepare the acetyl derivative. The Liebermann-Burchard and Salkowski sterol reactions are both positive with this second phytosterol from orange peel. The specific rotation is —1.3° in chloroform.

EXAMINATION OF RESIDUE LEFT AFTER SEPARATION OF THE PHYTOSTEROLS.

A. On concentrating the solution left after the phytosterols had been removed some material separated out and was filtered off. Two attempts were made to hydrolyze this material, once with alcoholic KOH and once with sodium ethylate. When this solution was diluted with water, the alcohol evaporated off and the solution extracted with ether, a small amount of material was obtained. (Only a trace of acid could be liberated from the remaining aqueous solution.) The material from the above solution was crystallized from various solvents including alcohol and petroleum ether and a small amount of substance was obtained which gave an indefinite melting point of 75–77°. In the hope of better purification the material was acetylated and again recrystallized several times. After drying a melting point of 62–63° was obtained. The original substance crystallized from alcohol in fine colorless needles and had the appearance of a wax alcohol. Ceryl alcohol has a melting point of 79° and ceryl acetate melts at 65°. It is thought, therefore, that the unknown substance might be impure ceryl alcohol.

B. The material left after *A* had been filtered off was then examined. Repeated attempts were made to isolate some substance which might be identified but nothing could be separated which could be defined. Saponification was tried twice, once with strong alcoholic KOH and once with sodium ethylate. The material thus treated was extracted with ether and the ether solution dried over anhydrous sodium sulphate. On evaporation of the ether solution a black, almost solid mass was obtained. This mass was fused with phthallic anhydride in the hope of separating an alcohol and a hydrocarbon. No alcohol was obtained and only a trace of acid recovered. The residue from the fusion came out where a hydrocarbon would be expected but all attempts to isolate one have thus far been unsuccessful. It is thought that this material may be oxidized carotinoid pigment.

SUMMARY AND CONCLUSIONS.

1. An examination has been made of the fats, sterols and related compounds of the sweet orange.

2. The following fatty acids have been characterized: oleic, linolic, linolenic, stearic and palmitic.

3. Two phytosterols have been identified one of which crystallizes in flakes and appears to be nearly pure sitosterol, the other one crystallizes in needles and would seem to be identical with the paraphytosterol of Likiernik.

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[1] *Z. physiol. Chem.*, 15 (1891), 430.

4. A phytosterol glucoside (phytosterolin) has been separated whose characteristics indicate it to be identical with the synthetic sitosterol-*d*-glucoside of Salway.

5. Glycerol has been identified.

6. Indications have been found of the presence of ceryl alcohol, a small amount of resin and carotinoid coloring matter.

A PROPOSED PHYSIOLOGICAL STANDARD FOR PITUITARIUM, U. S. P.*

BY WM. T. MCCLOSKY AND J. C. MUNCH.[1]

PHARMACOLOGICAL LABORATORY, FOOD, DRUG & INSECTICIDE ADMINISTRATION, DEPT. OF AGRICULTURE, WASHINGTON, D. C.

Glandular products are finding their way into therapeutics and some of them have found their way into the U. S. Pharmacopœia. "Pituitarium is the cleaned, dried and powdered posterior lobes obtained from the pituitary body of domesticated animals which are used for food by man. It is a yellowish or grayish amorphous powder, having a characteristic odor, and is only partially soluble in water" (10). Its official preparation is **Liquor Pituitarii.** No mention is made in the Pharmacopœia as to the physiological strength of Pituitarium. It is known that many manufacturers use Pituitarium to make Liquor Pituitarii. Confronted with this, how can the manufacturer know how much powder to use to make Liquor Pituitarii of the strength mentioned in the Pharmacopœia? Variations in manufacturing methods may cause differences in the physiological potency of Liquor Pituitarii, irrespective of the raw material used. By standardizing the potency of the Pituitarium powder only one of the causes of variation is removed, even though it may be the greatest. It is still necessary for the manufacturer to assay each lot of finished pituitary solution.

The potency of desiccated posterior pituitary powders is most important in considering the recommendation of the Second International Conference on Biological Assays held in Geneva in 1925 (5), that a dried posterior powder be adopted in every Pharmacopœia to be used as the basis for the preparation of all commercial pituitary solutions. This suggestion was not adopted by the Third Conference held at Geneva in 1928 (6), because there was some doubt whether such a powder would retain the diuretic action as well as the pressor and oxytoxic potency. Reports by Mackensie (3), Smith and McClosky (8) and Kestranek, Molitor and Pick (2) all indicate that the diuretic action of the posterior pituitary gland is quantitatively preserved in preparing a desiccated powder by the U. S. P. X method.

A number of samples of commercial posterior powders were obtained directly from the manufacturers, representing their current output, and a study of their activities made. Extracts were made to contain the activity of 1 mg. powder per cc. and 10 mg. powder per cc., and were prepared as follows: A desired amount

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* Scientific Section, A. PH. A., Portland meeting, 1928.

[1] Resigned Jan. 1, 1928.

of powder was carefully weighed, placed in a small agate mortar and moistened with a few drops of distilled water containing 0.25 per cent of acetic acid. The moistened powder was triturated thoroughly until the whole was of an impalpable frothy consistency. A few cc. of the 0.25 per cent acetic acid solution were added and the mixture stirred thoroughly. The mixture was transferred to a hard glass beaker; the small agate mortar was rinsed with acetic acid solution and the rinsings added to the pituitary mixture; then enough 0.25 per cent acetic acid was added to make the final volume of the mixture as above stated. This mixture was heated to the boiling point for not more than one minute and filtered. This solution was placed in hard glass ampules and sterilized by fractional sterilization for twenty minutes on three successive days at a temperature not exceeding 100° C., and then stored in the ice box until used.

The method of preparation as outlined is described by Smith and McClosky (7), and is the method specified in the U. S. Pharmacopœia (10), for the preparation of the test solution of the official standard posterior pituitary powder.

A supply of Standard Powdered Pituitary for this work was made according to the specification of the U. S. Pharmacopœia, Tenth Revision, and was assayed against the Standard Powdered Pituitary as supplied by the Bureau of Chemistry. It was found to check exactly with the official powder.

The uniformity of the above posterior pituitary powder, when compared with the official standard powder, further confirms the work of Smith and McClosky (7), as also the results of Nelson and Munch (4), and Swanson (9).

In carrying out the assay of pituitary extracts we have used the method and general type of apparatus for studying the activity of the isolated smooth muscle of mammals described by Dale and Laidlaw in 1912 (1), with some modifications. The apparatus must have an accurate temperature regulating device. The chamber in which the uterus is suspended should have a capacity of not less than 100 cc. We have used throughout this work young female guinea-pigs weighing between 250 Gm. and 300 Gm., which have not been pregnant or in heat, and have been segregated at the time of weaning and kept, therefore, out of sight and smell of the males.

The animal is killed by a blow on the head, and at once both horns of the uterus are removed and placed in Locke's solution. One entire horn, freed from the broad ligament, ovary and fallopian tube is suspended in the bath of Locke's solution. The temperature of the bath should be held within $^1/_{10}$ of a degree of 38° C. throughout the whole assay. After complete relaxation, which takes from 15 to 30 minutes, the weights upon the uterus are so adjusted as to write a base line with but slight spontaneous movements. The extracts to be tested are always pre-diluted with glass redistilled water so that the dose added to the bath of 100 cc. is usually about 0.3 cc. to 0.5 cc. and never exceeds 1.0 cc. The dilutions are usually made of such strength as to require nearly equal volumes of standard and unknown to elicit equivalent reactions. Each dose of standard and unknown is carefully measured with pipettes graduated to 0.01 cc. After an equivalent dose of unknown is found for a given dose of standard, the respective doses are then increased or decreased, or both, by 20 per cent. At the end of the experiment a large dose of standard is given to show that all previous reactions are due to sub-maximal contractions.

The following is the composition of the Locke's solution used in this work:

Sodium chloride	9.000 Gm.
Calcium chloride (anhydrous)	0.240 Gm.
Potassium chloride	0.420 Gm.
Magnesium chloride	0.005 Gm.
Sodium bicarbonate	0.500 Gm.
Dextrose	0.500 Gm.
Glass redistilled water to make	1000.00 cc.

The Locke's solution is freshly prepared each day from stock solutions of twentyfold concentration exclusive of the dextrose and sodium bicarbonate. The dextrose and sodium bicarbonate are weighed out each time as required. Oxygen used to aerate the bath should be bubbled through a 2 per cent solution of sodium bicarbonate to keep the tone and irritability of the uterine muscle at a uniform level, as suggested by Smith and McClosky (7).

The results of the assays are shown in the following table:

ASSAY OF COMMERCIAL POSTERIOR PITUITARY POWDERS.

P. C. No.	Original conc. prepared mg./cc.	Conc. found by U. S. P. X bioassay mg./cc.	Mg. com. powder equiv. to 1.0 mg. U. S. P. X std. powder.	% Activity std. powder.
1469	10.0	0.15	66.7	1.5
1544	1.0	0.25	4.0	25
1483	10.0	3.00	3.3	30
1548	10.0	3.60	2.8	36
1607	10.0	3.60	2.8	36
1556	10.0	5.00	2.0	50
1517	10.0	6.00	1.67	60
1463	10.0	7.50	1.33	75

From the figures reported the activity of the majority of the powders assayed is between 30 per cent and 50 per cent of the standard posterior pituitary powder, U. S. P. X and the recommendation is hereby made that 50 per cent be established as the standard of activity for "Pituitarium."

SUMMARY.

A wide variation in the physiological activity of eight samples of commercial Pituitarium which represent the current commercial output has been found. Physiological assay by the method outlined in the U. S. P. X showed that these products ranged from 1.5 per cent to 75 per cent of the physiological activity of the official U. S. P. X posterior pituitary powder.

A majority of the powders show an activity between 30 per cent and 50 per cent of the standard posterior pituitary powder.

The recommendation is made that the manufacturers be required to market a preparation for commercial purposes showing an activity of 50 per cent of the official standard powdered pituitary described in the U. S. P. X.

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A COMPARATIVE PRECIPITATION METHOD FOR THE QUALITATIVE IDENTIFICATION OF EACH OF THE COMMON GUMS.

BY WALTER WEINBERGER* AND MORRIS B. JACOBS.†

The common gums are rapidly attaining a wide use in commerce. With the exception of a number of specific tests for tragacanth, there is no easy, rapid and definite method for the differentiation of one gum from another.

We found, by use of the following method, that the precipitate given by any one of the gums when precipitated from an aqueous solution by alcohol was distinctly different than that given by any other gum.

A 1% test solution of each gum was made, except for agar-agar and Indian gum in which case a more dilute solution was made. To 20 cc. of the test solution, 70 cc. of 95% alcohol was added drop by drop, with constant stirring until precipitation was complete. The texture, quality and the characteristics of the precipitate, as well as the point at which definite precipitation began, were noted.

The gums used were acacia, tragacanth, Irish moss, quince seed, Indian gum and agar-agar. Acacia, tragacanth and agar-agar dissolved directly in the required amount of water. Two Gm. of Irish moss, obtained as the seaweed, were placed in 100 cc. of water and allowed to stand on the steam-bath for one hour. The swelled mass was filtered by pressure through flannel and the resulting filtrate was used as the test solution. Indian gum was permitted to stand on the steam-bath for four hours and the upper layer was used as the test solution. One Gm. of ground quince seed was placed in 100 cc. of water and allowed to stand for one hour on the steam-bath. It was then filtered through filter paper and the filtrate was used as the test solution.

The experiments were then repeated on test solutions of different concentrations and similar results were obtained. In no case could the precipitate given by one gum be confused with that given by any other gum.

A description of the behavior of each precipitate follows and a table, in which the differences in the precipitates may be seen at a glance, is appended. The terms, cloudy and clear, as applied to the supernatant liquid, indicate its appearance after the alcohol solution has been standing for four hours.

Acacia.—When 40 cc. of the alcohol had been added a very fine, flocculent precipitate appeared which became more dense on further addition of alcohol. It settled very slowly leaving a cloudy supernatant liquid. It distinctly did not adhere to either the stirring rod or the beaker.

Tragacanth.—When 10 cc. of alcohol had been added a precipitate first ap-

* 1453 Walton Ave., N. Y. C. † 573 Wyona St., Brooklyn, N. Y.

peared. On the further addition of alcohol, it took its final form, coagulated and very stringy. When examined apart from the solution the precipitate was bluish white and opaque. It was very adherent, forming a tail on the stirring rod when the rod was lifted out of the solution and clinging to it tenaciously until it slipped off by the force of its own weight. It did not adhere to the sides of the beaker. It settled rapidly leaving a clear solution.

Irish Moss.—When 20 cc. of alcohol had been added a light, stringy precipitate became visible. At 45 cc., the precipitate took its final form, coagulated, stringy, and when examined apart from the solution seemed a translucent jelly. It was somewhat adherent to both the stirring rod and the sides of the beaker. It settled not very rapidly and clear. It could easily be differentiated from tragacanth.

Agar-Agar.—At 20 cc. a flocculent precipitate appeared. It coagulated into large flocs when 40 cc. had been added. At the surface of the solution, the precipitate adhered to the sides of the beaker and the stirring rod, forming a meniscus. The final precipitate was very heavy. It settled evenly, leaving a cloudy supernatant liquid. The precipitate was opaque in solution but transparent when examined by itself.

Indian Gum.—A precipitate first appeared at 15–20 cc. The precipitate was very fine. It was composed of small filamentous particles which on further addition of alcohol formed narrow flakes. The precipitates settled on standing leaving a clear supernatant liquid. It was distinctly non-adherent.

Quince Seed.—At the addition of 25 cc. of alcohol the precipitate first appeared. When 50 cc. had been added a coagulated, stringy, dense precipitate was the result. The precipitate was opaque. It settled on standing, leaving stringy bunches at the bottom of the beaker and a pronounced cloudy supernatant liquid. The precipitate was non-adherent.

TABLE.

Gum.	Point of definite pptn.	Texture of precipitate.	Appearance.	Manner of settling.	Adherent quality.
Acacia	40 cc.	Very fine flocculent		Slow and cloudy	Did not ahdere to either rod or beaker
Tragacanth	10 cc.	Coagulated, long and stringy	Opaque	Rapidly and clear	Adhered persistently to rod alone, formed a tail when lifted out of solution
Irish moss	20 cc.	Coagulated and stringy	Translucent	Not very rapidly and clear	Adhered to both rod and beaker, did not form tail, almost as adherent as tragacanth
Agar-agar	20 cc.	Heavy flocculent	Translucent	Evenly leaving cloudy solution	Adhered, just at surface to both beaker and rod forming a meniscus
Indian gum	15–20 cc.	Very fine filamentous particles		Clear	Non-adherent
Quince seed	25 cc.	Coagulated, short and stringy	Opaque	Settled stringy bunches leaving cloudy solution	Non-adherent

From our experiments, we found, as the above descriptions and table indicate, that each gum, when precipitated from an aqueous solution by alcohol, gives a characteristic precipitate. This characteristic precipitate is easy to recognize and, consequently, gives a valuable index and, in most cases, definite knowledge as to which gum was in solution. The above method is an easy, rapid and definite method for the differentiation of one gum from another.

FACTORS INFLUENCING CALCIUM BALANCE.*

I. Influence of Potential Alkalinity on the Utilization of Supplementary Calcium Lactate in the Mature Rat.

BY VERSA V. COLE,[1] JOHN H. SPEER AND FREDERICK W. HEYL.

It is generally accepted that the path of excretion of calcium is influenced by the intake of other salts, due to their influence either upon absorption from the gut or to their influence upon retention in the tissues.

Mendel and Givens (1), working with dogs, found that the addition of 6.5 Gm. of sodium bicarbonate per day had no significant effect upon the calcium balance. They report also that large doses of sodium bicarbonate (40 Gm. per day) did not decrease the urinary output of calcium in a diabetic man. Sato (2) studied the effect of alkali on the retention of calcium in infancy, using doses of 2 and 3 Gm. of sodium bicarbonate added to milk. He came to the conclusion that it produced a distinctly unfavorable effect upon calcium balance.

The unfavorable influence of alkali used as sodium bicarbonate on the calcium balance is perhaps due to its influence in limiting the absorption of calcium and phosphorus in the gut by raising the p_H and converting the calcium into relatively insoluble salts in the upper small intestine. It is stated by Zucker and Matzner (3) that the p_H of the intestinal contents of rachitic rats tended to be alkaline, and alkaline feces were obtained. Babbott, Johnston and Haskins (4) note the influence of gastric acidity upon the absorption of calcium. Conditions of hypoacidity are said to reduce the absorption of calcium (5).

It may well be, therefore, that the measurements heretofore reported on the influence of alkaline bicarbonates on calcium balance may be a composite result of an unfavorable influence in the gut which conceals any favorable influence which the potential alkalinity of the bicarbonate might have produced.

Indeed where experimental study on calcium retention has considered the influence of alkalinity and has secured this without alkaline bicarbonates, favorable influence on positive calcium balances have been reported. Thus Bogert and Kirkpatrick (6), studying the effect of base-forming diets upon calcium metabolism, found that, while acid-forming diets caused a marked increase in urinary calcium, base-forming diets produced a decided diminution in urinary calcium. Re-

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* Scientific Section, A. Ph. A., Portland meeting, 1928.

[1] Holder of the Upjohn Coöperative Fellowship at Kalamazoo College (1927–28). This paper is based upon the thesis presented by Miss Cole to the Faculty of Kalamazoo College, in partial fulfilment of the requirements for the degree of Master of Science.

tention of calcium was favored on a basic diet. The degree of basicity of these diets ranged from 55 to 54 cc. of normal alkali. Calculated as potassium citrate this amounts to approximately 6.0 Gm. per day. Shohl (7) found a base-forming diet essential to calcium storage in the young. Baumann and Howard (8) and Chaney and Blunt (9) found that calcium assimilation was decidedly benefited by orange juice. In the last-mentioned experiments, 700 cc. of orange juice per day were used, which is equivalent to somewhat less potassium citrate than the diet used by Bogert and Kirkpatrick.

There is little doubt that increasing the potential alkalinity of the tissues, which have suffered acidotic effects in several well-known clinical conditions, has a favorable influence upon calcium balance. The effectiveness would appear to be a matter of degree depending upon the condition of the subject. Thus in an ill-nourished, toxic condition, such as the case of pernicious vomiting of pregnancy reported by Halverson, Mohler and Bergeim (10), a very conspicuous retention due to alkalies is due to the fact that a slightly increased calcium retention is augmented by the decreased drain of calcium. Thus it is difficult to state, in cases of slight negative calcium balances, whether a favorable influence of potential alkalinity is due to their effect as a food or as a drug.

In considering the question of the influence of alkali on calcium balance, it appeared important to us to disentangle the combined effect obtained by the use of sodium bicarbonate, and to study the effect of potential alkalinity separately. This can, of course, be easily accomplished by the use of alkaline citrates which will have far less disturbing influence upon the p_H of the gut than will the bicarbonate. Thus while it has so far proven difficult definitely to establish the influence of potential alkalinity upon calcium retention by selection of alkaline food factors, we felt that this afforded a very definite approach to the problem involved.

In our metabolism experiments we worked out a calcium level close to the minimum daily requirement and studied the influence of partial and complete systemic alkalization. The results reported in Table VII and summarized at the end of this paper show conclusively that systemic alkalization favors more complete utilization of calcium and phosphorus and perhaps also of magnesium.

As the intake of calcium lactate was increased from 5 to 10 mg. per day, the utilization of phosphorus was decreased and the calcium balance was not benefited.

In the same way, on a given calcium level of 4 mg. per day, there is probably an alkali intake between the two levels of 500 mg. and 30 mg. citrate per day (which we used in these experiments) at which maximum calcium and phosphorus balances are obtained. This maximum will no doubt differ for every different level of calcium lactate intake.

EXPERIMENTAL.

Conditions of the Experiment.—The rats used, averaging in weight about 225 to 250 Gm., were maintained on the regular wheat—dried milk—sodium chloride stock diet. This was changed to the basal experimental diet one day before the animals were transferred to the metabolism cages. After a six-day fore period on the calcium deficient diet, the test period of six days followed.

The food was cooked and scattering was thus prevented. The salt increment was added in 1 Gm. of starch and always given prior to the main feeding. In

this way the interaction of the saline increment with the inorganic constituents of the basal diet was to a large extent avoided, and the rat ate the whole of the salts on an empty stomach.

The basal diet had the following composition: Casein (purified), 18; Yeast, 2; Calcium free salt mixture, 1; Starch, 79.

The calcium free salt mixture was a neutral mixture designed to furnish all the inorganic elements (except calcium) in the same proportion as found in milk ash (11). Additions of Fe, I, Mn, F and Al were made at the same level as in Osborne and Mendel's salt mixture (12). The total composition was: Na_2CO_3, 120.8; K_2CO_3, 252.7; $MgCO_3$, 41.6; HCl, 109; H_3PO_4, 186.5; H_2SO_4, 6.1; Fe citrate (15%), 12.2; KI, 0.022; $MnSO_4$, 0.087; NAF, 0.283; $K_2Al_2(SO_4)_4.24H_2O$, 0.05.

An analysis of the salt mixture gave Na, 10.6%; K, 26.67%; Mg, 2.64%; Cl, 20.3%; SO_4, 1.15%; Ca < 0.04%.

Analysis of the whole ration showed, Ca = 0.018%; P = 0.285%; Mg = 0.030; calculated acidity = 185 cc. 0.1 *N* acid per 100 Gm. of the diet.

Several preliminary balance experiments indicated that this diet, except for the calcium, just barely sufficed to keep the rats in inorganic equilibrium.

Metabolism periods were six days. Rats were kept in individual Hendryx metabolism cages. Each animal received 1 drop cod liver oil per day. Feces and urine were collected and aliquoted separately, but analyzed together. McCrudden's method for Ca and Mg was used and Fiske and Subbarrow's colorimetric method for P.

In these experiments, we first established the amount of calcium which just barely sufficed to maintain equilibrium at about 4 to 5 mg. At this level, we then studied the influence of systemic alkalinity on calcium, phosphorus and magnesium balance.

1. In the first series, after a uniform six-day period on the calcium free acidotic diet, the number was divided and to half, 10 mg. calcium as calcium lactate was fed, while to the diet of the other half there was added also 0.5 Gm. sodium citrate per day, which is calculated to alkalize the animal.

TABLE I.—DATA FOR SIX-DAY PERIODS.

	Fore period.				10 mg. Ca as lactate added.			
Rat no.	Food intake.	Ca balance.	P balance.	Mg balance.	Food intake.	Ca balance.	P balance.	Mg balance.
	Gm.	*Mg.*	*Mg.*	*Mg.*	*Gm.*	*Mg.*	*Mg.*	*Mg.*
16[1]	75	−37.9	−23.3	−6.7	52	+14.9	− 2.6	−3.2
72	75	− 8.2	+ 3.7	−6.1	73	+44.8	+36.6	−1.1
92[1]	75	−52.8	−31.3	−8.7	69	+24.6	+27.2	+0.6
94	71	−62.6	+ 6.7	−0.2	30	+40.0	− 4.7	−2.5

[1] Rats receiving sodium citrate during Ca-lactate period.

At this level of calcium intake, it appears that increased potential alkalinity did not favorably influence the calcium balance. Thus comparing in Table VII the balance of No. 16 and No. 94, the rat without alkaline increment gained more calcium than the one with this addition, and the same is found true in comparing No. 72 and No. 92. In respect to phosphorus retention, alkaline increment favored

TABLE II.—DATA FOR SIX-DAY PERIODS.

	Fore period.				4 mg. Ca as lactate added.			
Rat no.	Food intake. Gm.	Ca balance. Mg.	P balance. Mg.	Mg balance. Mg.	Food eaten. Gm.	Ca balance. Mg.	P balance. Mg.	Mg balance. Mg.
9[1]	44	−72	−84.6	−11.4	45	+ 6.4	+ 4.5	+ 0.9
16	60	−39	+ 1.0	− 1.8	45	−20.3	+ 5.3	± 0.0
47[1]	70.5	−26	+ 7.9	+ 0.6	67	+15.4	+35.8	+ 5.7
92	71.0	−35.5	−26.3	+11.0	71	+ 0.8	+ 0.4	+11.1
94	37.3	−30.0	−13.8	+ 1.6	38	+ 5.4	− 8.6	− 0.6
157[1]	63.3	−64.2	−47.7	−14.4	44	+ 9.6	+ 9.9	+ 0.9

[1] Rats receiving sodium citrate during Ca-lactate period.

it and this is also true of magnesium. We concluded that the calcium level was too high to evaluate the effect of potential alkalinity.

2. In the second series, we fed during the experimental period half the rats with 4 mg. calcium as lactate, and the others with 4 mg. calcium as lactate plus 0.5 Gm. sodium citrate per day.

Here a very decidedly favorable effect of the alklaine citrate is noted on both calcium and phosphorus retention.

3. Another series was carried out exactly as in 2, except that the calcium increment was depressed to 3 mg.

TABLE III.—DATA FOR SIX-DAY PERIODS.

	Fore period.				3 mg. Ca as lactate added.			
Rat no.	Food intake Gm.	Ca balance. Mg.	P balance. Mg.	Mg balance. Mg.	Food eaten. Gm.	Ca balance. Mg.	P balance. Mg.	Mg balance. Mg.
9	37	−29.2	−38.8	− 5	39	− 1.4	−27.2	−3.2
16[1]	39.2	−40.1	−24.8	− 7.2	39	−17.9	−18.1	+0.4
47	54.5	−29.2	+10.7	− 6.1	55	− 7.6	− 1.5	−3.0
92[1]	51.0	−60.3	−32.0	− 6.4	50.2	−11.5	−14.2	−1.6
94[1]	30	−47.3	−59.3	....	33	+ 3.0	−21.9	−4.0
157	27.8	−41.7	−57.4	−11.6	33	− 2.8	+ 2.1	−3.5

[1] Rats receiving sodium citrate during Ca-lactate period.

These figures again reveal a favorable influence of potential alkalinity on calcium and phosphorus balance and the percentage of the intake which is utilized is no doubt increased by the alkaline increment as judged by the change in balance shown in Table VII.

4. In the preceding three experiments the daily addition of potential alkalinity amounted to 50 cc. 0.1 *N* alkali per day; the diet itself having a potential acidity of 185 cc. 0.1 *N* per 100 Gm. food, or about 18.5 cc. per day where 10 Gm. were eaten. In the fourth series given in Table IV, the potential alkalinity was increased by the addition of citrate equal to 30 mg. of sodium citrate in the test period.

Referring to Table VII, it can be seen by comparing this series with those reported in Experiment 2, that with a 5-mg. increment of calcium and much less citrate, the calcium balance is not quite as favorably influenced as with 4 mg. in-

TABLE IV.—DATA FOR SIX-DAY PERIODS.

Rat no.	Fore period. Food eaten. Gm.	Fore period. Ca balance. Mg.	Fore period. P balance. Mg.	Fore period. Mg balance. Mg.	5 mg. Ca.; 30 mg. citrate. Food eaten. Gm.	5 mg. Ca.; 30 mg. citrate. Ca balance. Mg.	5 mg. Ca.; 30 mg. citrate. P balance. Mg.	5 mg. Ca.; 30 mg. citrate. Mg balance. Mg.
3	76	−17.4	−42	−14.3	78	+41.0	+42	+5.1
13	76	−28.0	−66	−13.8	78	+14.1	+30	+1.8
29	76	− 8.0	−65	−12.4	78	+41.2	+38	+1.0
31	76	−65.0	−92	−13.4	76	+ 5.0	+23	+2.8
47	81	−12.6	−50	−11.8	81	+43.7	+47	+2.4
157	76	− 6.2	−55	− 8.9	78	+38.5	+35	+3.2

crement, but the phosphorus balance is markedly influenced by the increased calcium intake even with less alkali.

5. In the fifth series, the work reported in 4 was repeated at a level of 4 mg. per day.

TABLE V.—DATA FOR SIX-DAY PERIODS.

Rat no.	Fore period. Food eaten. Gm.	Fore period. Ca balance. Mg.	Fore period. P balance. Mg.	4 mg. Ca; 25 mg. citrate. Food eaten. Gm.	4 mg. Ca; 25 mg. citrate. Ca balance. Mg.	4 mg. Ca; 25 mg. citrate. P balance. Mg.
1	77	−51.8	−25	68	− 8.3	+ 7
2	77	−39.7	−20	75	+ 3.1	+29
3	77	−56.7	−18	75	− 8.0	+39
4	73	−32.4	− 9	58	+16.9	+28
5	77	−49.9	−45	36[1]	− 3.2[1]	− 3.9[1]
6	77	−59.7	−36	66	−10.7	+ 5

[1] Rat No. 5 was found to be sick during this period, and died a few days after its close.

This series may be compared (see Table VII) with Experiment 2, and it is seen that the increased alkalinity in the second series has somewhat favorably influenced calcium retention, though not by any means is the difference proportional to the alkaline increment. The comparatively slight addition of base in this experiment has had a markedly favorable influence on phosphorus balance.

6. For the sake of comparison, the rats used in Experiment 5 were after a time put through the same process, using during the test period an increment of 4 mg. calcium as calcium carbonate.

TABLE VI.—DATA FOR SIX-DAY PERIODS.

Rat no.	Fore period. Food eaten. Gm.	Fore period. Ca balance. Mg.	Fore period. P balance. Mg.	4 mg. Ca as carbonate. Food eaten. Gm.	4 mg. Ca as carbonate. Ca balance. Mg.	4 mg. Ca as carbonate. P balance. Mg.
1	29	−24.2	−46.5	40	−9	−25
2	62	−24.5	−52	69	+1.3	− 3
3	64	−36.7	−54	70	−9.3	− 6
4	62	−21.9	−46	70	+5.6	+ 6
6	62	−26.7	−52	70	+1.3	0
7	65	−22.8	−55	70	+7.6	− 1

Comparing these balances with those found in Tables II and V, it can be concluded that at the same level of equilibrium, the calcium in $CaCO_3$ is not utilized as well as calcium lactate alone, but that it causes a far superior phosphorus absorption. The addition of alkaline bases to the lactate improves both the calcium and phosphorus assimilation so that utilization is superior to that found with carbonate.

TABLE VII.—TABULAR SUMMARY OF EFFECT OF POTENTIAL ALKALINITY ON CALCIUM, PHOSPHORUS AND MAGNESIUM BALANCES.

Rat no.	Calcium increment mg. per day.	Added alkali in cc. 0.1 *N* per day.	Added alkali as Na citrate per day.		Changes in balances due to additions of (a) calcium; (b) of calcium and Na citrate; 6-day period. Ca.	P.	Mg.
	Mg.	*Cc.*	*Mg.*		*Mg.*	*Mg.*	*Mg.*
16	10	50	500	b	+ 53	+ 21	+ 4
72	10	..	...	a	+ 53	+ 33	+ 5
92	10	50	500	b	+ 77	+ 59	+ 9
94	10	..	...	a	+103	− 11	− 2
9	4	50	500	b	+ 78	+ 89	+12
47	4	50	500	b	+ 41	+ 28	+ 5
157	4	50	500	b	+ 73	+ 58	+15
16	4	..	...	a	+ 19	+ 4	+ 2
92	4	..	...	a	+ 36	+ 27	± 0
94	4	..	...	a	+ 35	+ 5	− 2
16	3	50	500	b	+ 22	+ 7	+ 8
92	3	50	500	b	+ 49	+ 16	+ 5
94	3	50	500	b	+ 50	+ 37	..
9	3	..	...	a	+ 28	+ 12	+ 2
47	3	..	...	a	+ 22	− 12	+ 3
157	3	..	...	a	+ 39	+ 60	+ 8
3	5	3.1	30	b	+ 58	+ 84	+19
13	5	3.1	30	b	+ 42	+ 96	+16
29	5	3.1	30	b	+ 49	+103	+13
31	5	3.1	30	b	+ 70	+115	+16
47	5	3.1	30	b	+ 56	+ 97	+14
57	5	3.1	30	b	+ 45	+ 90	+12
1	4	2.5	25	b	+ 44	+ 32	Not det.
2	4	2.5	25	b	+ 43	+ 49	
3	4	2.5	25	b	+ 49	+ 57	
4	4	2.5	25	b	+ 49	+ 37	
5	4	2.5	25	b	+ 47	+ 6	
6	4	2.5	25	b	+ 49	+ 41	
1	4	..	...	a	+ 15	+ 22	Not det.
2	4	..	...	a	+ 26	+ 49	
3	4	..	...	a	+ 27	+ 48	
4	4	..	...	a	+ 28	+ 52	
6	4	..	...	a	+ 28	+ 52	
7	4	..	...	a	+ 30	+ 54	

The results of all these experiments are tabulated in Table VII in which the total effect of the salt increment in the test period, compared with the blank fore period, is shown as the algebraic difference of the balances in these two periods. Undoubtedly there would be a certain measure of improvement in the second period were no salt at all added, due to the efforts of the organism to conserve its mineral

reserve, but the relative effectiveness of each combination is clearly brought out by this method. Such treatment of the data is necessary, since in spite of the uniform treatment of all the rats in the fore period, uniform negative balances could not be induced.

SUMMARY.

1. Adult rats fed on an acidotic, calcium deficient diet required an increment of 4 to 5 mg. calcium as lactate per day to come into calcium balance.

2. With calcium carbonate, the rat came into calcium balance at about the same level.

3. Calcium carbonate was probably entirely dissolved at this level and it gave in fact a much better utilization of the phosphorus, than was secured with calcium lactate.

4. Comparatively small additions of alkaline citrate to calcium lactate increased the percentage utilization of both calcium and phosphorus; larger additions of citrate caused still greater increase in utilization, though not in proportion to the amount of alkali fed.

5. It would, therefore, appear reasonable that calcium lactate would be better utilized when fed in conjunction with alkaline citrate.

6. Alkalinity probably had a favorable influence upon the magnesium balances.

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RESEARCH LABORATORIES,
THE UPJOHN COMPANY,
KALAMAZOO, MICHIGAN.

COLLECTION OF AND TRADE IN SENEGA ROOT, CANADA.

Senega root is grown chiefly in the Province of Manitoba, Saskatchewan and Alberta; the largest yield is in Saskatchewan. The root is gathered in the spring by the Indians who prepare it for market by washing it and then drying it in the sun. It is bought by individuals who visit the Indian camps for that purpose and these buyers in turn sell to dealers in the larger cities of the Prairie Provinces. It is estimated that over 400,000 pounds of senega root were collected during the spring of 1928; for shipment the root is tightly packed in bales of 200 pounds each.

Up to several years ago senega root from Winnipeg was shipped to Europe, especially to Germany, the shipments being made direct. However, for the past few years large quantities have been sent to New York City where it is handled by jobbers and wholesale druggists.

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Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

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HIGH CLASS PHARMACY.*

BY J. LEON LASCOFF.

We pharmacists all know the true meaning of the term *High Class Pharmacy*. Unfortunately the public often labors under the mistaken idea that a *High Class Pharmacy* is represented entirely by a window display of widely advertised perfumes, or by the modern lunch counter with its shining brasses and glossy mahogany; and, in the rear of the store, we find a few drugs and pharmaceuticals.

What is truly meant by *High Class Pharmacy?* After all, this profession, regarded as one of the noblest in the days of the medieval apothecary, has reached the state when such a thing as a drugless drug store has become a reality. Fortunately, the New York State Department of Education forbade these stores from using the term drug store in New York, but they are known as patent medicine and perfumery shops.

The very existence of these shops is due to the fact that the pharmacists neglected the professional side of pharmacy and stressed the merchandising, thereby making the shop lose its individuality and making it in many respects no different from these perfume shops. The greed of the pharmacist in many cases made him forget his professional duty because of the attraction of "quick turnovers," "free goods" and high pressure salesmanship.

I recall the remarks of Dr. J. Solis Cohen on "The Function of the True Pharmacist." He said, "It seems to me that a larger and nobler meaning should be given to the term pharmacist. The true pharmacist has a function to fulfill—

* Section on Practical Pharmacy and Dispensing, A. Ph. A., Portland, Me., 1928.

a much higher function than drawing soda water or handing out proprietaries over the counter. When the physician ceased to collect and prepare the drugs he administered and turned over to the apothecary that important duty, in order to devote more time to his special study of diagnosis, pathology and therapeutics, the apothecary became charged with all the responsibilities concerning the medicament that had heretofore rested upon the physician. In the evolution of science and of art, the responsibilities both of physicians and pharmacists have become greater, not less. The grocer, or the notion dealer, or the ten-dollar clerk in the department store, has sufficient knowledge to take a package from the shelf and hand it to a purchaser, or even to decant a portion of it into another container. As a physician, I look to my brother of the pharmaceutical profession for greater knowledge, greater skill and greater assistance than I can get from the grocer's clerk or the errand boy."

Not long ago, I had the pleasure of visiting a number of so-called drug stores and real pharmacies with President Skinner, of the Pharmaceutical Society of Great Britain, and, later, with Dr. Krusen. It would be impossible for me to describe in detail what we observed and what we were told during these visits. The visitors were very much surprised by seeing the large space devoted to the merchandising and the very little space devoted to the actual handling of drugs and dispensing of prescriptions. In most cases, when we entered these shops, we had to look for and ask for the so-called prescription department; there was no sign of any kind.

Now I do not necessarily infer that the presence of cosmetics or a luncheonette necessarily detracts from a store being a *High Class Pharmacy*, but I do insist that stressing these departments *only*, and utterly disregarding the drug and prescription department, is not only contrary to good business but, in my opinion, distinctly fraudulent practice in claiming a store to be a *High Class Pharmacy*.

We older pharmacists are often told that times have changed and that we must keep up with the times. That is quite true and my theory has always been to progress and keep up, within reason, with modern conditions—but I never have and never will advise the complete suppression of the drug and pharmaceutical departments of the pharmacy and rely entirely on the outside appearance and surface to try thereby to substantiate a claim of *High Class Pharmacy*.

The owner of a high class pharmacy or the purchasing agent of a chain of high class pharmacies, should consider prices secondary to quality. Even though he may have a knowledge of how to compound prescriptions, he still may not turn out the proper preparation because of an inferior constituent. This question often arises in my daily work, even in our own pharmacy. Not long ago, a prescription calling for lead acetate and zinc sulphate, in equal parts, was mixed and a yellow product resulted. Upon investigation we found that the zinc sulphate was not U. S. P., though labeled as such.

After many years of experience and dealings with high class physicians, a pharmacist's prescription department flourishes and he is able to render better service to the public than the type of man who looks only for the quick profits and immediate gain, by buying everything at the lowest figure. If a mixture or other preparation does not turn out as it should, the pharmacist who cares little

about his prescription department will not experiment by making it over, but will simply place a shake label on the container and hand the preparation over to the patient. Let us take the following prescription as an example.

An ordinary lotion containing zinc oxide, magnesium carbonate, etc., etc. A high class pharmacist will use the purest zinc oxide and magnesium carbonate obtainable. The price will be a secondary consideration and the result is that the preparation will be entirely different from the same prescription compounded in the so-called merchandising store, where the owner buys the cheapest chemicals obtainable. The real pharmacist will turn out a homogeneous mixture while one of the other class would turn out a good-for-nothing mixture.

In my experiments I have come across many cases where chemicals bought cheaply became an extravagance because of the fact that they were not up to standard although labeled as such. About two years ago, a friend of mine was approached by the representative of a foreign chemical house. The agent had a large quantity each of bismuth subcarbonate and bismuth subgallate, marked "C. P." and "U. S. P." The price quoted was far below the market. My friend bought fifty pounds and suggested that I buy the same amount. Before buying, however, I had the salts tested and, to my amazement, arsenic was found in the chemicals. I refused to buy, of course, but the salesman told me that I was very foolish, as the product was being repacked in pound cartons marked "U. S. P.," and sold at the market price or, perhaps, a few cents lower. I informed one of my salesmen friends, who lost no time in spreading the facts to other pharmacists who might be inveigled, with the result that these peddlers of chemicals had considerable difficulty in marketing their merchandise to the pharmacists of New York, without facing the problem of having their chemicals analyzed for purity, before the transfer of money. It is unfortunate that lack of faith and confidence has forced the pharmacist, the physician and the layman to specify the brand of chemical, but this is due to the fact that there are still a few who place price before quality.

I will illustrate here a number of prescriptions which were put up in two different stores, one in the *High Class Pharmacy* and one in a store of the other type. One of these prescriptions was compounded by the proprietor or by one of his assistants, who are highly trained pharmacists; the other was compounded in a store of the other class, put up by an incompetent clerk, whose mind was trained on selling only. The difference between these mixtures is readily noted.

I love my profession, and just as other men have their hobbies, my hobby is to take a difficult prescription and experiment and try to have the finished product a perfect example of pharmaceutical skill and science.

No. 1.

Magnesium Carbonate	25.0
Zinc Oxide	10.0
Expressed Oil of Almond	45.0
Lime Water	25.0
Rose Water q.s. ad	240.0

The correct procedure for compounding this prescription is as follows: First, saponify the lime water with the expressed oil of almond. To this saponification product add the powders little by little, with constant trituration. Lastly, add the proper amount of rose water. While

this method of compounding is correct the finished product may not turn out to be satisfactory, unless the chemicals used are of the highest purity. If the magnesium carbonate is a fine, silk-finished powder and the zinc oxide is of the best quality, the finished product will be a smooth, homogeneous mixture from which there is no separation of the oil.

No. 2.

Zinc Oxide	30.0
Starch	60.0
Olive Oil	90.0
Lime Water ad	500.0

Should this prescription be compounded in the order of the ingredients the oil at once separates and a very unsatisfactory mixture results. The proper method is to first saponify the olive oil with ninety Gm. of lime water. The next step is to triturate the zinc oxide and the starch in another mortar. To the mixed powders add the saponified lime water and oil slowly and with constant trituration. To the resulting smooth, uniform lotion the remainder of the lime water is added. If this procedure is carried out the finished prescription will be one that no pharmacist need hesitate to dispense.

No. 3.

Acetylsalicylic Acid	1.2
Methenamine	1.2
Water to make	60.0

If this prescription is compounded with chemicals which are free from impurities a clear solution should result. If, however, impure chemicals are used in compounding, a precipitate may form. Should this happen some pharmacists would add powdered acacia to the mixture. Here, again, the question of *purity* arises. If the acacia is not of a high grade quality it will have an effect on the color and the appearance of the mixture. The correct method is to compound and dispense this prescription without the addition of any acacia. In this case the addition of any camouflage may be avoided by the use of pure chemicals.

No. 4.

Camphor	2.0
Tincture of Benzoin	12.0
Acetic Acid	40.0
Rose Water to make	120.0

Unless this prescription is correctly compounded a very unsatisfactory mixture will be produced. First of all, the camphor should be dissolved in the tincture of benzoin. This solution should be added slowly to the mixed acetic acid and rose water and the precipitate which forms should then be removed from the liquid. To this precipitate is added, in a separate mortar, two drachms of acacia and to this mixture is then added the liquid little by little, with steady trituration until a homogeneous lotion is formed.

No. 5.

Iodoform	2.0
Balsam Peru	8.0
Petrolatum to make	120.0

Time and again this and similar prescriptions have caused pharmacists considerable trouble, which is due entirely to the wrong method of incorporating the balsam of Peru. In this prescription the balsam of Peru should be mixed with the petrolatum and then the iodoform should be added in small portions at a time. If the iodoform and the balsam of Peru were mixed first, the gummy portion of the balsam would immediately separate and its inclusion would be impossible.

No. 6.

Tannic Acid	4.0
Alum	4.0
Dobell's Solution to make	120.0

This prescription gave more trouble, perhaps, than any of the ten prescriptions presented here. If it is compounded as written a thick, heavy sediment is formed which it is impossible to remove from the bottle. The correct procedure is to use, in place of the tannic acid, 20.0 of glycerite of tannin. The alum is first dissolved in the Dobell's Solution and the glycerite of tannin is added a little at a time. By this procedure a fine clear solution will be obtained. There is no objection to the glycerin of the glycerite of tannin. Glycerin is present in the Dobell's Solution and the additional few mils which are added will not have the slightest effect on the therapeutic action of the finished prescription.

No. 7.

Tincture of Cannabis Indica	8.0
Sodium Bromide	15.0
Tincture of Valerian	8.0
Water to make	120.0

Here, again, if the prescription is compounded as written. If it is simply dispensed as a "shake" mixture the subdivision of doses will be unequal. In order to overcome this enough acacia should be added to the precipitate to insure its uniform suspension throughout the mixture.

No. 8.

Camphor	2.0
Menthol	0.6
Balsam of Peru	4.0
Ointment of Zinc Oxide	30.0

The proper method for the compounding of this ointment is as follows: First, rub up the balsam of Peru with about 20.0 of the ointment; next, triturate the camphor and menthol together and then incorporate them with the remainder of the zinc ointment; lastly, combine the two ointments. This method will insure a smooth, uniform ointment and will prevent the separation of the balsam of Peru.

No. 9.

Powdered Tragacanth	1.5
Zinc Oxide	5.0
Rose Water	50.0
"Aquaphor"	50.0

In the compounding of this prescription improper procedure invariably ruins the finished product. The tragacanth and the zinc oxide should be thoroughly mixed with the rose water. This mixture is then added to the "Aquaphor" little by little. Sometimes this mixture is difficult to combine and the water separates out. Should this occur the addition of a small amount of Mineral Oil will hasten the absorption of the water and aid in the forming of smooth creamy ointment.

No. 10.

Argyrol	8.0
Albolene to make	60.0

Any pharmacist knows that it is impossible to add argyrol crystals directly to solid albolene and obtain a proper ointment. In order to prepare this ointment properly the argyrol should be dissolved in a small amount of water. This solution should then be incorporated in a little wool fat and then added to the albolene.

Just as a pharmacist is responsible for selling an inferior chemical to the public, so the salesman is also responsible to both the public and the pharmacist. No harm can come to the patient if a pharmacist sells a cheap comb or brush or any other side-line, but a great deal of harm can be done by the pharmacist if he

sells a preparation which is not up to standard and which does not come up to U. S. P. requirements.

As we know, we have a number of chemicals which are labeled "For Technical Use," "U. S. P.," "C. P." and "Highest Purity;" the pharmacist should never purchase articles for technical use. The salesman who represents a chemical house should never encourage a pharmacist to buy a cheaper grade. His best possibilities are to recommend and induce the pharmacist to buy the better grade. After all, the person who is sick and wants to get relief will not care much about the cost, but wants results.

About ten years ago, the Board of Pharmacy in New York State collected samples of Magnesium Carbonate, U. S. P. One of the largest houses, which makes a specialty of these products, claimed it was difficult to make a strictly U. S. P. product and was honest enough to admit it. At that time we collected quite a number of samples which were marked U. S. P. and for which U. S. P. prices were charged, and they did not come up to the standard. I call this dishonesty.

The same applies to **Magnesium Usta Ponderosa;** I tried to compound a mixture with some and water and it turned pink. First I thought that the mortar was not clean and probably there were traces of phenolphthalein. After further experimenting I discovered that it was not the fault of the mortar but of the product itself; it did not come up to the standard. This also applies to strontium salts, to sodium salicylate, atropine, pilocarpine, etc.

Another matter which I want to call to your attention is that the salesmen sometimes endeavor to sell articles which do not keep. For instance, **Spirit of Nitrous Ether** should never be sold in gallon lots, but in pint or one-quarter pint bottles. On many occasions we found samples that assayed only one-tenth of its original strength.

Another case of an unscrupulous method in meeting competition was one where they sold Elixir Lactated Pepsin which hardly contained any pepsin and not more than 5% Alcohol. The finished product was little more than plain sugar water slightly colored.

Does it pay to conduct a *High Class Pharmacy?* Yes, by all means, I can speak from my own experience. It is a hard struggle at the beginning and one must make many sacrifices, but in the end one achieves success.

Once more I repeat that no pharmacist should lose sight of the fact that he is in business for a profit. A *High Class Pharmacy*, in my opinion, does not necessarily have to grow cobwebs on the cash register. I know of high class pharmacists throughout the country who, because of the profits they have shown, have been able to increase their business and merge with other businesses, bringing these up to the same high standards and making formerly unheard of profits due to the transaction. So, good business methods may go hand in hand with *High Class Pharmacy.*

As far as honesty in dispensing is concerned, I would say that the guiding motive of all *High Class Pharmacies* should not be that "Honesty is the best policy" but that "Honesty is the only policy."

AN OLD DRUG STORE.*

BY W. L. DUBOIS.[1]

Dr. Thomas O'Hara Croswell, a physician, came to Catskill from Litchfield, Conn., and, in 1792, with his brother Mackay founded and published for many years the paper called the *Catskill Packet.* It was printed on a sheet of coarse blue paper about ten by twelve inches in size and contained the latest news brought by the fast sailing packet sloops, which in those days made the passage from New York to Catskill (wind and weather permitting) in about six days. It also contained many advertisements and was interspersed with numerous woodcuts which were said to be the handiwork of the Doctor. Only his spare time was devoted to the paper, for he was a physician the like of whom never had been nor will there probably ever be one of the profession who will secure the confidence, esteem and love in which the good old "Uncle Doctor," as he was called, was held by all ages, sexes, classes and conditions. He was a great favorite with the children, and his capacious pockets always contained a goodly supply of sugar plums and licorice for them. When the first Post Office was established in Catskill, George Washington appointed Dr. Croswell postmaster, and how well he performed his duties may be inferred from the fact that through all the changes of administration of government, and through all the mutations of politics in the next fifty years, he held that position until his death, in 1845. He was survived by his wife, who lived to be 96; she died in 1861.

In 1795, Dr. Croswell associated with him his protege and student Dr. Abel Brace and they opened the first drug store in Catskill. They did a large business in drugs, chemicals, dye stuffs, paints, oil and window glass, and also sold large quantities of potash, for in those days every farmer's wife made her own soap. They purchased their goods from the old house of H. H. Schieffelin & Company, then located at 104–106 John Street. Later, the firm name was changed to Shieffelin Bros. & Co. and they moved to 170 William Street. The goods were shipped by the sloops at that time. The drug store supplied the doctors with their drugs, and all the little fulling-mills located on the many streams in Delaware, Schoharie and Greene counties they supplied with dye-woods and the tanners with large quantities of whale oil. In 1822 they moved from the old location to the new brick building, corner Main & Water Sts., which has been occupied as a drug store ever since. After the death of Dr. Croswell the business was taken over by William H. Wey who had married Dr. Croswell's adopted daughter, and he conducted the business until his death in 1851 when his son Benjamin Wey became the proprietor. He conducted the business alone until 1860, when he formed a partnership with Mr. Lavelle. They overhauled and remodeled the old store which was then considered one of the finest stores along the Hudson River, but this partnership only lasted for two years as Mr. Lavelle died in 1862.

In the winter of 1863 Mr. Wey made me a proposal to become his partner and I resigned my position with Schieffelin Bros & Co. and came to Catskill March 1, 1863. After a pleasant partnership of thirteen years Mr. Wey retired and I became sole proprieter June 1, 1876. Everything was booming in Catskill at that

* Section on Historical Pharmacy, A. PH. A., Portland meeting, 1928.

[1] The author of this paper celebrated his ninetieth birthday at Portland.

time, for it was a noted summer resort and the gateway to the mountains, and there was also no Mountain railroad so the business was all done in Catskill. Later, the Catskill Mountain railway was built, so the mountain towns were able to get their supplies direct from New York and the town became less and less of a resort and there was a great change in the drug business, and by 1881 it had become almost entirely a patent and proprietary business. During the next 25 years there were opened in Catskill four more drug stores, making eight in all, and for a number of years it was hard work keeping the old store going but, finally, one by one four of them went out of business and now with only four left in the town we are each able to make a comfortable living. Business is conducted very differently from what it was when I came to Catskill 65 years ago. Then we had to go to New York to buy our goods; now the travelling salesmen come to us with their samples and take our orders.

In these days of the automobile, for almost every one has one, there is a tendency for the trade to be drawn from the smaller towns to the larger cities, especially where the department stores sell patent medicines and all the druggists' sundries at cost or below, just for an advertisement. I am very thankful for the good health that enables me to be at the "old drug store" every day and hope to be able to continue to go until the end. I am wondering what the business will be fifty years hence?

AUSTRALIAN PROPRIETARY MEDICINE REGULATIONS.

Strict regulations regarding proprietary medicines are being adopted by the Health Department of Western Australia. It has been decided to enforce clauses four and six of Section 72 of the report dealing with the Uniform Standards for Foods and Drugs, which were decided upon at the annual conference in May 1927. The regulation provides that a declaration of the drugs contained in medicines or medicinal preparations for internal or external use shall appear in bold letters on the label of the package; also that any label relating "to any drug or medicine shall not claim to suggest that it will remedy or cure asthma, Bright's disease, cancer, consumption or gout, or that the drug or medicine is a panacea for, or is infallible, or is a cure for baldness, a skin food, hair food, or nerve food, or that it will develop certain parts of the body, raise the height, or eradicate wrinkles. The regulations will come into force in Western Australia on February 1, 1929.

In Victoria also consideration is being given to regulations dealing with the disclosure of formula of proprietary medicines. A final revision of the proposed regulations for Uniform Standards for Food and Drugs is being made by the Victorian State Food Standards Committee, and it is expected that the matter will be submitted to the Minister for Health early in September.—(Assistant Trade Commissioner H. R. Buckley, Melbourne.)

CANADIAN P. A. T. A. WILL TEST COMBINES ACT.

The Proprietary Articles Trade Association has asked the Canadian government to make a reference to the Supreme Court of Canada as to the constitutionality of the Combines Act. The association contends that the law is *ultra vires*, as interfering with the rights of the provinces as established by the British North America Act. It is expected that the government will refuse the reference, and then the P. A. T. A. may have the matter tested by contravening the act and arguing unconstitutionality in defense.

The association was held to be an illegal combine in 1927.

INTERNATIONAL HOSPITAL CONGRESS.

Governments of all countries with which the United States has diplomatic relations have been invited to send representatives to the First International Hospital Congress to be held during the week of June 12, 1929.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

WHY FAST TURNOVER PRODUCES LARGER MARGINS.

A thousand dollars invested in a stock of merchandise which is turning over once a week is producing on each turnover a net profit of, say, $10. It is simple arithmetic then to note that this investment of $1000 will earn in a year's time 52 times $10 or $520, which of course, is a net return of 52 per cent on the investment in merchandise.

On the other hand, a thousand dollars invested in some other line of merchandise may produce a net profit of $250 every time it is sold. The rub is that the characteristics of this stock of merchandise are such that it won't turn over more than once a year and thus the $250 profit on the $1000 investment is earned but once in a year's time. This is, to be sure, a 25 per cent return on the investment, but this rate of return is less than half that earned in the first case, although the profit on the individual sale is 25 times as great.

Above I have given the theoretical explanation of the turnover principle. From this theoretical explanation, it is perfectly apparent why shrewd merchants are willing to make sacrifices in their net margins of profits if the effect will be to increase turnover. On this account it would be expected, therefore, that the businessess with the highest average turnover would be the ones showing rather low net margins of profit on sales. For instance, a drug store doing $50,000 with a profit of $2500 and an average turnover of its merchandise stock 5 times a year obviously is earning more on its merchandise investment than a firm which made $2500 profit on a $25,000 business but which had an average turnover of its merchandise stock only once a year.

So much for the theory. The facts which are needed to support or to controvert the hypothesis I have just outlined are available so far in sufficient detail only for department stores. However, I am sure that the conditions found in this field can be taken as illustrative, at least, of what undoubtedly exists in other retail lines, including, of course, the drug store.

One striking conclusion is apparent at once from these facts, as the table below shows. The stores with the fastest turnover not only make the most money on their merchandise investment but their profits per dollar of sales average more than they do in the stores with slow turnovers. The figures recently released by the Harvard University Bureau of Business Research show this.

These stores, all of them with annual sales over $1,000,000, were grouped according to the profits earned on sales with the following result:

Profits earned on sales.		Annual turnover of merchandise stock.	
4% and over	Under 2%	4.1	3.5
2% to 4%	Loss	3.9	3.3

* Instructor of merchandising, Wharton School of Finance and Commerce, University of Pennsylvania, Lecturer on Business Administration, Philadelphia College of Pharmacy and Science.

The three things that determine the profitableness of a business are the volume of business done, the net margin of profit on each dollar's worth of business and the turnover. The Harvard figures certainly indicate that turnover, in its own right, vitally affects the profitableness of a business but, in addition, is a determining influence upon the net margin of profit on each individual sale.

The reason for this inter-relationship lies in the following situation. The costs of conducting a retail business fall into two general groups. One group is composed of those items which result from expenditures for keeping the merchandise in the store ready for sale. It includes rent, taxes, insurance, depreciation and so on—the expenses which go on regardless of the amount of business done, or, in fact, regardless of whether or not any business at all is done. In a manufacturing business these expenses would be called the fixed charges.

The other group of expenses is composed of items which result entirely from selling or efforts to sell. They include, of course, salaries of sales people, delivery costs, credit and collection expenses and so on. This class of expenses occurs, naturally, only if and as sales are made.

The only source, of course, from which the money can come to pay either of these classes of expenses is the money received from the sale of merchandise. Now take a hypothetical example and see how it works out.

Suppose a sale is made amounting to	$1.00
This merchandise costs, say	0.65
Assume that the purely selling expenses amounted to	0.18
And that the cost of keeping the merchandise in the store ready for sale (rent, insurance, taxes, depreciation and so on) averaged	0.11
Leaving a profit of	0.06

Assume that the average turnover of this merchandise stock was four times a year. Again, in theory, it looks as if the business is on perfectly safe ground if every dollar's worth of business it does can be done on this basis. It is, *if every dollar's worth of business is done on this basis.* Notice, however, that one of the requirements for compliance with this condition is that the turnover of the merchandise stock shall average four times a year, or once every three months.

That is to say, the average time which, in the hypothetical example above, elapses between the purchase and the sale of a dollar's worth of merchandise is three months. The cost of keeping it on hand for this three months' period is, as enumerated, 11 cents.

Suppose, however, things don't go as planned. The merchandise isn't sold in three months. The merchandise isn't sold until six months have passed. Instead of a turnover of four times a year, it now averages only twice a year. If eleven cents is the cost of keeping merchandise on hand ready to sell for three months, it follows that the cost of keeping it on hand ready to sell for twice as long, or six months, will be twice eleven cents or twenty-two cents. Now look at the hypothetical example:

The merchandise is sold at the end of six months for	$1.00
This merchandise cost	0.65
The costs of making the sale totaled	0.18
And the cost of keeping the merchandise on hand ready to sell for six months instead of three amounted to	0.22
Thus causing a net loss on the sale of	0.05

A reduced rate of turnover of merchandise stock thus decreased the earning power of this merchant's business in two vital ways. In the first place, he had to wait six months instead of three months before receiving any return at all on his 65-cent investment in merchandise. Second, and more important, the mere fact that he had to wait this additional time before making a sale caused the costs of keeping the merchandise in the store ready for sale to amount to a total which destroyed all possibility of any profit at all when the sale finally was made.

Shrewd merchants always bend every effort to make sales as quickly as possible. If, for example, the average sale could be made within one month instead of three, the following would be the costs and profits:

Selling price of the merchandise	$1.00
Cost of this merchandise	0.65
Cost of making the sale	0.18
Cost of keeping the merchandise on hand for one month ready to sell (one-third of 11 cents)	0.04
Resulting in a profit of	0.13

Thus, if it were possible to increase the turnover of merchandise stock from once every three months to once a month the margin of profit on each individual sale would be more than doubled. In every one of the cases above I have considered the merchandise to be staple, non-depreciating items. The effect upon profits of merchandise which is kept so long that it has to be marked down before it can be sold can be imagined readily. For instance, look at this:

Merchandise bought to sell at $1.00 finally has to be disposed of at the end of six months for	0.85
This merchandise cost	0.65
Cost of making the sale	0.18
Cost of keeping the merchandise on hand for six months ready for sale	0.22
Resulting in a loss of	0.20

It is not necessary even to mention the losses which are bound to occur on merchandise which is of such a perishable nature that if it is allowed to remain on hand too long it spoils and becomes, of course, absolutely unsalable at any price.

Certainly these facts are justification enough for a druggist to bend every effort to sell merchandise *quickly*, for the more *quickly* merchandise is sold the more quickly profits are received. In addition, these profits, if earned quickly, are bound to be greater than if the merchandise is kept on hand for a longer time because the shorter the period merchandise has to be kept in a store the lower the cost inevitably of keeping it there.

N. W. D. A. URGES ENACTMENT OF PRICE MAINTENANCE.

The N. W. D. A. is giving support to the Capper-Kelly Price Maintenance Bill, and has requested the members to assist in the effort. The points made by Congressman Clyde Kelly are stressed in favor of the enactment and the words of Mr. Justice Holmes, of the U. S. Supreme Court, in the Miles' decision is quoted in the literature being sent out. The statement made by the Justice is as follows: "I cannot believe that in the long run the public will profit by this court permitting knaves to cut reasonable prices for some ulterior purpose of their own and thus to impair if not to destroy the production and sale of articles which it is assumed to be desirable that the public should be glad to get."

Further arguments are that the measure will place business on a more honest plane and stimulate the national growth and enterprise.

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

H. M. Lerou, President, Norwich, Conn. J. W. Gayle, Treasurer, Frankfort, Ky. M. N. Ford, Chairman of Executive Committee, Columbus, Ohio. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

ACTIVE MEMBER STATES.

Alabama	Indiana	Montana	Rhode Island
Alaska	Iowa	Nebraska	South Carolina
Arizona	Kansas	Nevada	South Dakota
Arkansas	Kentucky	New Hampshire	Tennessee
Colorado	Louisiana	New Jersey	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming

To the Members of the Boards of Pharmacy of the United States, Greetings:

THE year 1929 promises to be a year in which there is much to be gained for our profession as pharmacists. Through the united efforts of all associations, the Capper-Kelly Bill has been brought to a place in Congress where its passage looks almost certain.

Another bill, soon to be introduced, is one providing for a Pharmacy Corps in the United States Army. This bill was sanctioned by the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Association Boards of Pharmacy at the Portland meeting, in 1928. Although this bill has met with much opposition from the Medical Department of the Army, every effort is being made to effect its passage and to advance the profession of Pharmacy in the minds of the world. Much work is also being carried on along the educational lines in order to give the pharmacist a better scholastic and practical training, thereby further instilling into the minds of the public the trust in us, which justly belongs to the time-honored profession.

I take this opportunity, as President of the National Association Boards of Pharmacy, to extend best wishes for a prosperous and most successful New Year.

H. M. LEROU, *President.*

THE LESSON IN OWNERSHIP LAW DEFEAT.

The Pennsylvania Ownership Law was recently declared unconstitutional by the Supreme Court of the United States.

The court's cited contention was that the ownership of a pharmacy has nothing whatever to do with public health, and that the public health of Pennsylvania is amply safeguarded by laws regulating the practice of pharmacy, in that no person not a registered pharmacist in the meaning of the law can conduct or manage any drug store or pharmacy. The court reviewed former statutes of the

state of Pennsylvania in support of the contention that ownership has nothing to do with public health, it having been properly safeguarded by statutes passed prior to the enactment of the ownership law. The court further held that the act plainly forbids the exercise of an ordinary property right, and on its face denies what the constitution guarantees.

This is not necessarily the end. It has been established by law in many of the states that a corporation cannot practice a profession. In such states, no corporation can practice medicine, dentistry or law. Pharmacy must organize within itself to meet the standards required of a profession. While we consider ourselves as members of a profession, will the courts and the general public do so as long as a grammar-school graduate with but a few years of drug store experience and little actual pharmaceutical training is granted a license in some states? Undoubtedly, medicine, dentistry and law have earned the professional recognition given them. Where can a physician, dentist or lawyer get a license without a college degree? Once this condition has been established in pharmacy, it will not be difficult to get similar legal recognition.

H. C. C.

OBITUARY.

Fred W. Churchill, President of the Vermont Board of Pharmacy, died of pneumonia on December 15, 1928, after a very short illness. He was a graduate of the Albany College of Pharmacy and has been a member of the board since 1924. He conducted a store for the Vermont Marble Co. at Proctor.

To the wife who mourns his loss, heartfelt sympathy is extended by the entire membership of the N. A. B. P. Pharmacy in Vermont has lost one of its most loyal and able workers.

PERSONAL.

A dinner will be tendered to **Dr. William C. Anderson,** for many years a member of the New York Board of Pharmacy, but recently retired. The time will be February 6th and the place one of the leading Brooklyn hotels. Dr. Anderson is dean of the Brooklyn College of Pharmacy. Members of the New York Board and officers of the various pharmaceutical organizations in the state will be present, also Dr. James Sullivan of the Department of Education. This is fitting recognition of the faithful service Dr. Anderson has given pharmacy for so many years.

L. E. Highley, member of the South Dakota Board of Pharmacy, was recently elected to the state senate. Senator W. L. Buttz of Aberdeen, and Representative V. E. Frantz of Lake Norden, both pharmacists, were reëlected. With such representation, the interests of pharmacy in South Dakota are well protected.

EXAMINATION SCHEDULE.

The following 1929 examinations have been announced by the various boards of pharmacy:

Alabama	Feb. 13, 1929	Birmingham, Ala.
Arizona	April 10, 11	State House, Phoenix, Ariz.
District of Columbia	Jan. 10, 11	Washington, D. C.
Florida	Jan. 14, 15	Orlando Memorial High School, Orlando, Fla.
Illinois	Jan. 16, 17	Springfield, Ill.
Indiana	Jan. 14, 15, 16	Indianapolis College of Pharmacy, Indianapolis, Ind.
Kentucky	Jan. 8	Phoenix Hotel, Lexington, Ky.
Kansas	Feb. 6, 7	Wichita University, Wichita, Kas.
Mississippi	Jan. 8	Jackson, Miss.
Missouri	Jan. 21, 22	Jefferson City, Mo.
Ohio	Jan. 15, 16	Columbus, O.
Pennsylvania	Jan. 10, 11, 12	Pittsburgh College of Pharmacy, Pittsburgh, Pa. and Philadelphia College of Pharmacy, Philadelphia.
Tennessee	Mar. 18, 19	Nashville, Tenn.
Virginia	June 4, 5	Richmond, Va.
Vermont	Feb. 6	State House, Montpelier, Vt.
Washington	Jan. 3	University of Washington, Seattle, Wash.

STATE BOARD NEWS ITEMS.

Alabama.—Reciprocal registration was recently granted to Fonza M. Jones, of Georgia.

Arizona.—Only twelve out of a class of forty-three who took the November examination passed with licentiate grades. Secretary Hulett comments "More serious work and study by the young men will have to be done. What can we do to get them to thinking and working harder in their chosen life profession?"

Reciprocal registration was granted to the following: Lulu B. Wilson and Horace M. Doak, both of Arkansas; Carl T. Kamphaus, of Pennsylvania; Carl W. Wickman, of Oklahoma; Henry Hayutin, of Colorado; and Nettie I. Wooley, of Ohio.

The University of Arizona has been asked to add a School of Pharmacy department, and it is hoped this will be accomplished within a year.

Colorado.—An examination was held on December 28th and 29th with an unusually large attendance. Inspector Kemble has made inspection of nearly every drug store in the state during the year, and has persuaded the reluctant ones to take examination, register as apprentices or take out reciprocal licenses, as the case may be. This accounts for the many examinees at recent meetings.

The legislature goes into session in January, and a college graduation prerequisite law will be introduced and, it is hoped, passed.

Iowa.—The following have recently been admitted to Iowa by reciprocity: Edwin P. Monson, of Nebraska; W. Ben Eldredge, of Illinois; Ruben A. Schmiedt, of South Dakota.

Kansas.—Carson C. Gilbert of New Mexico and Fred M. Stevenson of Arkansas were recently granted registration by reciprocity.

Maryland.—Reciprocal registration was recently granted to John F. Hershner, of Delaware, and Edwin C. Cauffman, of Pennsylvania.

Michigan.—The following were recently registered by reciprocity: Helen R. Young, of Indiana; Maurice R. Parr, of Iowa.

Minnesota.—Hugo O. Peterson, of Minneapolis, has been appointed to succeed himself as a member of the Minnesota Board by Governor Theodore Christianson.

He is a graduate of the University of Minnesota, '10, owns three stores in Minneapolis and has served on the board since 1919. His new term is for a five-year period, commencing January 1, 1929.

Missouri.—Reciprocal registration was recently granted to the following: Benjamin W. Smith, of Arkansas; Harold D. Garner, of Illinois; Edgar A. Langford, of Tennessee.

Nevada.—A bill has been drafted, which is to be presented to the January session of the state legislature, which provides for adequate inspection of the state, both in pharmacy and medicine.

Charles Handley, of Iowa, was recently granted registration by reciprocity.

New Jersey.—Reciprocity has been extended to the following: Abraham P. Karsh, of Delaware; Charles A. Light and Ephraim H. Goodman, both of Pennsylvania.

North Carolina.—Reciprocal registration was granted to the following during December: Henry L. Lester, of Virginia; John A. Underhill, of South Carolina.

North Dakota.—The board of pharmacy held its November meeting at the Agricultural College, Nov. 13th to 15th, and eight candidates were granted licenses.

Ohio.—The annual report of the board reveals the following statistics: 214 out of 375 taking the registered pharmacist examination passed—57%; 71 out of 115 taking the assistant pharmacist examination passed—62%. There are 5256 pharmacists holding license in the state, and 720 assistants.

South Dakota.—George E. Sherman, of Sherman and Moe, Huron, S. Dak., was recently appointed a member of the South Dakota Board of Pharmacy by Governor W. J. Bulow, to succeed A. R. Williams, of Aberdeen, retired.

Tennessee.—Reciprocal registration was recently granted to John B. Galbraith, of Kentucky, and Max W. Reynolds, of Georgia.

Texas.—Forty-three out of one hundred and thirty candidates taking the September examination passed. The highest general average was 88 1/3, made by Roy A. Laney, of Malakoff, Tex.

Virginia.—The annual meeting of the Board of Pharmacy of Virginia will be held in Richmond on Monday, April 22, 1929. No examination will be conducted at that time.

West Virginia.—Reciprocal registration has been granted to John F. Marr, of Ohio, Joseph E. Ledford, of Georgia and Fred L. Osborne, of Kentucky.

Wyoming.—Bliss O. Bignall, of Oklahoma, has been granted reciprocal registration recently.

THE LIABILITY OF A PHARMACIST UNDER THE PROHIBITION LAW HAS REASONABLE LIMITATIONS.

Bulletin No. 12, 1928 of the AMERICAN PHARMACEUTICAL ASSOCIATION, issued December 27, 1928, announces that recently the permit of a Baltimore pharmacist was revoked after a hearing before the Federal Prohibition Administrator and this action was reviewed by Judge W. C. Coleman of the United States Court for the District of Maryland, on appeal of the pharmacist.

The grounds for the revocation of the permit by the Administrator included among others the question of the responsibility of a pharmacist in filling prescriptions for alcoholic liquors. The Court in its decision reviewed the testimony submitted by the Administrator and the pharmacist, and made the following statement in reference to the responsibility of a pharmacist when filling prescriptions under the National Prohibition Act:

"There is nothing in the Prohibition Act which makes it the duty of a pharmacist to do more than satisfy himself that a prescription as presented is *prima facie* regular upon its face. The result of the findings of the Administrator is to rewrite the law, and to say to a pharmacist that he fills a prescription at his peril; in other words, that he must satisfy himself of the good faith of the physician issuing the same, even to the extent of actually identifying the patient named therein. Such requirement would be impracticable and unreasonable and is not to be implied in the enforcement of the present law. This does not mean, however, that a situation may not arise which would render it incumbent upon the pharmacist to make some investigation before filling the prescription. Just when such a situation might arise it is unnecessary to decide here. It is not to be determined by the number of prescriptions presented in any one day or given number of days, or by any other one circumstance."

The Court ordered the pharmacist's permit restored and an abatement of the penalties assessed in the case.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

To the Members of the American Association of Colleges of Pharmacy:

YOU are about to enter upon the thirtieth year of your existence as an organized body, the object of the formation of which was to promote the interests of pharmaceutical education. The manner in which you have discharged the duties imposed upon you and the rapid progress which you have made toward complete fulfillment of the purpose for which you were brought into being is most worthy of commendation. I, therefore, take the privilege which the beginning of the new year gives me to compliment you on the fine record which you have made and to wish you the best of health for the coming year in order that you may continue in the fullest measure the good work which you have begun.

As we stand upon the threshold of the new year and gaze back over the thirty years which have passed, we find that during this period much was accomplished of which we can be proud and that, although slow and discouraging at times, steady progress was made toward the attainment of our ideals. The picture would be one of almost complete satisfaction were it not for the fact that we also find that there were misunderstandings and that mistakes were made. Unfortunately time will not be turned back and we cannot undo what has been done. Mistakes, however, can be corrected and it is hoped that each and everyone of you will give serious thought this year to the matter of correcting what in your minds appear to be errors of omission or commission on our part. Our Association can function for the good of all, only, if the spirit exhibited is one of "give and take."

While we have accomplished much in the past, there is still much to be done—it is quite probable our most important work still lies before us. We have obligated ourselves to begin the four-year course as the minimum of instruction for graduation in 1932, which means that we must begin to put our house in order to meet the new conditions that will confront us. We have also pledged ourselves to take an active part in the survey of pharmacy about to be launched, and which has every indication of developing into one of our greatest undertakings. Then there is the matter of elaborating the new Syllabus, now almost upon us. These and other projects await our attention. They are all of sufficient importance to merit careful study by all of us and they must have the attention of the keenest minds in our group if they are to be made to yield the best results.

I assure you that those whom you have entrusted with the management of your affairs are alive to the importance of these projects and of the responsibilities imposed upon them, but we are also aware of our limitations when it comes to coping with the matters before us. We need and must have your help. I therefore urge you to write to the officers of your Association or to visit them in person when you have a suggestion to make or an opinion to which you are willing to give expression. Personally, I will deem it a favor if each of you will write me during the course of the year on whatever is uppermost in your minds at the time or, better still, make an appointment to meet me when you happen to come East. The latchstring will always be out for you in Baltimore.

A. G. DUMEZ, *President.*

The American of to-day has become a "joiner" and the average man belongs to a great number of organizations, some of which he is unable to give much time to. It is possible that our spirit of organization has been carried to an extreme in American life but we all know of great good that has been accomplished by many organizations and that this good could not possibly have been accomplished by individuals. To every true pharmacist his professional organization should take first place and he should feel it his duty to contribute his best efforts to these organizations, regardless of whether he is able to support his other organizations as well as he feels they deserve. With this thought in mind it is almost imperative that the young man in the profession should be acquainted with the professional organizations that are doing so much for the benefit of the calling that he is choosing to follow for life. If our students are initiated while they are in college into our state and national pharmaceutical organizations, they are likely to continue their membership as long as they remain in pharmacy. The following article from the pen of Dean Wulling is well worth consideration by the deans of our colleges of pharmacy and it is hoped that ways and means will be developed for interesting more of our students in our state and national pharmaceutical organizations.—C. B. JORDAN, *Editor.*

WHAT PART SHOULD STUDENTS TAKE IN ORGANIZED PHARMACY?

BY FREDERICK J. WULLING.*

One of my many correspondents, who does much work with students throughout the United States, asked me to express my views as to the part students should play in organizational pharmacy. It is a pleasure for me to do this, since I too have contact directly and indirectly with many students and alumni and know how successfully the still plastic student mind can be impressed with right ideals and practical purposes.

In my work with students and pharmacists I have found it less difficult with students than with the older rank and file of pharmacists to impress them with the need and acceptance of the full recognition of a solidarity and coherence characterizing any social group or profession, that makes of it a whole, an organic entity, to which its members owe a loyalty and allegiance and a devotion and service in its coöperative and collective work toward higher and better standards and achievements. If this conception of the composite nature and structure of a profession is early instilled and fixed into the minds of students, they will recognize more fully and will observe throughout their lifetimes their individual obligations to their calling and will regard their profession as a something which has a real existence, as a species of compound being and which needs the full and willing support and nurture on part of its components for its greatest success and service to man. It is not an easy matter to present this idea of a body of persons collectively engaged in a calling as constituting a homogeneous, separate, invisible whole, having an existence separate from its components but with which it shares a mutuality and reciprocation and interdependence and a giving and a receiving. As an example to illustrate the idea, I use the state and its citizens. The state is not an object that can be seen, but everyone recognizes its existence and its necessity for the welfare of the citizens. The state does things collectively for the good of all the citizens, and which the individuals could not do separately. The citizen owes allegiance to the state and

* University of Minnesota.

pays taxes. He is related to every other citizen by his membership in the population or citizenry constituting the state and he shares alike with every other citizen the responsibility of the government and destiny of the state through his participation in and exercise of the franchise, the expression of his individual will or preference through his vote. The citizen and his state, and the pharmacist and his profession are co-relatives. With proper drilling the students finally understand thoroughly that the pharmacist is related to his profession much as the citizen is related to his state.

With this fact firmly fixed in the minds and consciousnesses of the students and with the concurrent obligations to the calling willingly and understandingly approved and accepted by them, the foundation is laid for their intelligent and helpful contribution toward the welfare of their calling. Without this prerequisite as part of their early orientation, students become only average members of the profession, of whom there are already too many, who think of themselves alone and of their self-interest, and who contribute little or nothing to the common good of their profession, but who selfishly enjoy the mass benefits and advantages created for them by the faithful and right-minded. Pharmacy would be much better off in all respects if every member would be fraternally-minded and conduct and contribute himself in that spirit. Then the present lack of unity, coöperation and mass assertiveness which is hindering the development of the profession, would never have become possible. The coming pharmacists must be trained to become more loyal and contributive to the common pharmaceutical cause, as against the prevalent spirit of the times which is steeped in self-interest. For this reason I urge with all the emphasis and appeal at my command that only right-minded recruits be admitted to pharmacy and that they be rightly trained, not only in the purely technical aspects but in the academic, ethical, social, fraternal and humanistic as well.

Given then, the right kind of students who have accepted the teachings outlined above, further right instruction and its acceptance as a future guide in the practice of pharmacy, become easier for teacher and student, respectively.

Of the many activities with which rightly selected students should now be made familiar and in which their participation should be enlisted and in some respects required, I am to speak only of the part they should take in associational work.

First their interest should be aroused. They should be reminded that associations are made up of members who, like themselves, are the individuals who constitute the associational organic whole or entity, to which they are obligated in devotion and service.

There are various ways of arousing the students' interest in association work. Here at the College of Pharmacy of the University of Minnesota we have a method of orienting and interesting the entire student body that has been not only very effective but very popular. For many years now the faculty has excused from regular class work, with the approval of the University authorities, the students of all classes annually to attend two days and sometimes three of the annual three-day sessions of the State Association. Before the State meeting occurs, all the students are given an orientation lecture at a specially called College assembly on the aims and purposes and procedures of the Association as stated in its constitution and by-laws, on its history and on its initiative in legislation. The relation of the Association to local, other state and national associations, the Board of Pharmacy,

institutes, seminars, conferences and councils to show the interdependence of associations, is fully explained. The method of associational work through officers, committees, sections and councils is elucidated and the results and records of the work illustrated by the exhibition of the volumes of Proceedings published to date, (forty-four in 1928). The volumes are distributed among the students for their closer inspection and later each student is required to consult as a definite library assignment one or more of the volumes. A few minutes are devoted to a presentation of the printed program of the previous meeting and something is said of the nature of the papers and addresses included and a word about each of their authors. With this information and preparation the students attend the meetings, not for pleasure but for a laboratory demonstration in association procedure. Lecturers at the conventions have often complimented the students on their good furtune of having such opportunities for becoming acquainted in this practical and first-hand way with associational work. Students are invited to join the Association as soon as they become eligible and many of them do so and contribute their share of work. In the regular orientation course of twelve to fifteen lectures, the first-year students are familiarized with the objects and work of the AMERICAN PHARMACEUTICAL ASSOCIATION, National Association of Retail Druggists, National Wholesale Druggists' Association, American Association of Colleges of Pharmacy, National Association of Boards of Pharmacy, Drug Trade Council, the various seminars, conferences, Research Council, etc., so that on the whole they have a very good idea of the associational structure of pharmacy and their relation to it. Of course, students cannot be expected to take a large part in the work of the associations representing their chosen profession. Their part is to lay the foundation for a full measure of responsible work as soon as they graduate. They do take full and active part in their own student associations and thus become familiar with parliamentary usage, committee work, etc., and as soon as they can become association members, they are ripe for a full share of work. It is therefore the business of their elders and teachers to make certain that students become good association material concurrently with their technical training. A very significant illustration of student participation in associational work and enterprise is their almost universal financial contribution to the AMERICAN PHARMACEUTICAL ASSOCIATION Headquarters Fund. This contribution by a body of persons not yet in their productive period is a substantial testimonial to student interest and participation in a meritorious association activity.

EXCHANGE LECTURES.

This year a pleasant arrangement has been made between the two oldest colleges of Pharmacy in this country—the Philadelphia College of Pharmacy and the New York College of Pharmacy—whereby a series of exchange lectures will be given by the members of the faculties of the two institutions. During November, Dean Rusby of the New York College gave a lecture on his South American trips to the students of the Philadelphia College and on December 12th, Dean LaWall, of the Philadelphia college returned the compliment by giving an illustrated lecture on the pharmaceutical chemists of the by-gone days to the students of the New York College.

After Dean LaWall's lecture, he and Mrs. LaWall visited all parts of the college building after which an informal faculty reception was held in the college library, followed by an informal dinner at the Hotel Dauphin, tendered to Dean LaWall by the members of the faculty.

H. V. A.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

CHICAGO.

The Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION had an exceptionally interesting meeting at the Illinois School of Pharmacy, Tuesday evening, December 11th.

President Gathercoal called the meeting to order, and after appointing the committe on nominations, which is to report at the next meeting, introduced the speaker of the evening, Dr. C. W. Edmunds.

Dr. Edmunds told of his work in connection with the Committee on Revision of the U. S. Pharmacopœia in which he is analyzing the strength of strophanthus and digitalis galenicals on the market.

At present strophanthin has no standard and it was found that some products on the market are exactly one-half the strength of others. The official one-hour frog method was used, the four-hour method, the intravenous method and the cat method. The cat method was found to be quite reliable, but the proposed colorimetric methods did not prove satisfactory.

Four samples of ouabain were studied by the methods mentioned and the four-hour method was found to require a smaller dose than the one-hour method. Three samples of strophanthin out of six were found to have the same strength as ouabain.

Six samples of tincture of strophanthus were assayed and only two were of the official strength, one was 50 per cent and three were about 60 per cent of the required strength. The trouble may be in the method of assay, as dilution of the tincture with a semi-alcoholic solution hinders the absorption of the drug. Dilution should always be made with normal saline solution.

In the one-hour method twice as much tincture of strophanthus was needed as compared with the intravenous method. In the four-hour method about 8 per cent more tincture was needed, indicating the slow absorption of tincture of strophanthus. Tincture of strophanthus, therefore, is not readily absorbed in the stomach.

Tincture of digitalis takes about 65 per cent more for either the four-hour or one-hour method than the intravenous method.

Powdered digitalis was found to be considerably stronger than the U. S. P. requirement in many cases.

After Dr. Edmund's presentation, a general discussion followed, in which Dr. Camp gave interesting comments regarding the saponins of digitalis and their influence on absorption. Dr. Monias inquired further concerning the desirability of a colorimetric method and Mr. Gray emphasized the need of a preparation of digitalis for hypodermic use.

S. W. MORRISON, *Secretary.*

NEW YORK.

The December meeting of the New York Local Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was called to order in the Lecture Hall of the New York College of Pharmacy, on Monday December 10, 1928 at 8:15 P.M., Dr. Hugo H. Schaefer, presiding.

The minutes of the previous meeting were approved as read.

Treasurer Currens reported a balance of $730.81 on hand in the treasury.

Chairman Lehman of the Committee on Education and Legislation reported on the recent decision of the Pennsylvania Supreme Court of the Pharmacy Ownership Bill.

Membership Committee: Dr. Canis, submitted the names of (175) students for membership in the AMERICAN PHARMACEUTICAL ASSOCIATION.

The Dr. Lascoff Testimonial Dinner was discussed and it was decided to hold this some time in January. Mr. Lehman was made Chairman of this Committee.

President Schaefer, then introduced the speaker of the evening, Mr. John M. Grace of Winthrop Chemical Company and H. Metz Laboratories who read a paper on *"The Salvarsans in Pharmacy."*

There being no further business it was regularly moved that the meeting adjourn.

ROBERT R. GERSTNER, *Secretary.*

PHILADELPHIA.

The December meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Tuesday evening, December 11th, at the P. A. R. D. building, 2017 Spring Garden Street, Philadelphia, Pa., President Nichols presided.

The minutes of the previous meeting were approved. The Secretary read a letter from Col. S. C. Wynne, Prohibition Administrator, thanking the AMERICAN PHARMACEUTICAL ASSOCIATION for the resolution they passed recently in connection with the efforts of his office to administer the Prohibition Law. (See minutes of November meeting for Resolution.)

The following resolution has been sent to Mrs. Kraus, widow of one of our most prominent members, Otto Kraus.

IN MEMORY OF OTTO KRAUS.

WHEREAS, Almighty God in His wisdom has removed from our midst Our Friend and Colleague, Otto Kraus,

WHEREAS, As a member of the AMERICAN PHARMACEUTICAL ASSOCIATION for many years, he endeared himself to all who came in contact with him, and

WHEREAS, Through the medium of his genial personality, his unswerving loyalty and his willingness to serve, he greatly helped toward the success of the Philadelphia Branch of the A. PH. A.

WHEREAS, The Officers and Members of the Philadelphia Branch of the A. PH. A. appreciating the long and successful services that Otto Kraus has rendered to Pharmacy and deeply deploring his death, desire to perpetuate his memory.

Therefore Be It Resolved, That the Officers and Members of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION do hereby express their keen regret and sense of loss at the departure of their esteemed friend and colleague, whose memory will be fondly cherished by all who enjoyed the pleasure of a close friendship with him.

Be It Further Resolved, That this resolution be spread upon the minutes of the ASSOCIATION and a copy be sent to the widow as a meager expression of the loss we feel and the sympathy we extend to her and her family.

A. PH. A., M. S. DUNN, *Secretary.*

Discussions followed concerning the status of active and associate Branch members and also Student Branches.

The main part of the evening was devoted to the annual prescription clinic, and various members contributed choice odd prescriptions. A few of these are listed here.

1. Strontii Bromidi
   Misturæ Rhei Compositæ

Why does it effervesce?

2. Petrolati Liquidi ℥ i
   Magmæ Magnesiæ ℥ iii

Add a few soap flakes and get a fine emulsion.

3. Acidi Borici ℥iv
   Phenolis ʒiii
   Alumenis ʒi
   Olei Menthæ piperitæ ʒiss

Becomes green when the phenol and oil of peppermint are brought into intimate contact during the compounding of the prescription.

4. Tincturæ Ferri Chloridi ℥ii
   Potassii Chloratis ʒi
   Glycerini ℥iii
   Liq. Potassi Citratis q.s. ad. ℥iii

Green color develops due to formation of citro chloride of iron.

5. Soluz. Acido Salicilico 2 00/00 500.0
   Sig.-External use

This form of indicating percentage is used in Europe and calls for 500 cc. of a 0.2 per cent solution, the 00/00 or 0/00 indicating 1 : 1000

whereas our usual percentage 0/0 indicates 1 : 100.

6.	Phenolis	gr. xx
	Mentholis	℥i
	Acidi Borici	℥ii
	Glycerini	*f*℥ss
	Aquæ qs.ad	*f*℥vi
	M. Sol.	

Menthol is insoluble in aqueous solution but if fifty per cent of the water is replaced with alcohol, a clear solution may be dispensed.

M. S. DUNN, *Secretary.*

UNIVERSITY OF WASHINGTON.

OCTOBER.

The regular monthly meeting was held October 18th, in Bagley Hall auditorium. Robert J. Ruth, of E. R. Squibb & Sons, presented two films of moving pictures. One on biologicals and the other on cod-liver oil. The biological film was entitled "How Science Aids in Controlling Infectious Disease." In addition to covering the general subjects of manufacture and standardization of biological products, the entire first reel of the film is devoted to portraying the theory of immunity, both active and passive. Other interesting topics shown are the agglutination of typhoid organisms, as in the Widal Test; photomicrographs of living typhoid organisms, showing flagella; the Dick Test, etc., a subject which to our knowledge have not heretofore been depicted in motion picture films.

The film which had cod liver oil as its subject was entitled "Sunshine from the Sea." It first portrayed the importance of sunlight; the vital qualities of ultra-violet rays, then cod-liver oil and its value because of its Vitamin A and D content. The story starts with a Babylonian scene in Technicolor, showing sun worshippers. The subject of the physics of light is portrayed, partly in Technicolor and partly diagrammatically. The entire presentation is unique and interesting. Then the story of cod-liver oil is graphically told, step by step, from the fisheries to the final testing of the oil upon white rats to ascertain its vitamin content and shows the special precautions used to preserve these valuable properties in the finished product.

NOVEMBER.

The regular monthly meeting was held November 15th. Because of the approaching Thanksgiving vacation and the pre-vacation examinations, no formal program was presented. The business of the meeting consisted of a report from the membership committee followed by a discussion on ways and means of stimulating affiliation with the ASSOCIATION. Since the opening of school only 17 members have been elected into the ASSOCIATION. The program for the year including the annual banquet was outlined and discussed.

H. A. LANGENHAN, *Secretary.*

PHARMACY CORPS BILL INTRODUCED.

On January 15th, Congressman Clyde Kelly, introduced H. R. 16278—"To amend the National Defense Act by providing for a pharmacy corps in the Medical Department of the United States Army." The bill was referred to the Committee on Military Affairs, which is composed of Messrs. Morin (Chairman), James, Ransley, Wurzbach, Reece, Speaks, Wainwright, Glynn, Furlow, Johnson of Illinois, Hughes, Hoffman, Kahn, Quin, Fisher, Wright, Garrett of Texas, McElwain, Boylan, Hill of Alabama, Chaplan and Houston of Hawaii.

Senator Copeland has introduced the same Bill in the Senate. The Senate Committee on Military Affairs is composed of Messrs. Reed of Pennsylvania (Chairman), Warren, Greene, Bingham, McMaster, Pine, Robinson of Indiana, Brookhart, Blaine, Fletcher, Sheppard, Tyson, Blease, Steck, Wagner, Black and (vacancy). The number of the Senate Bill is 5406.

Make a notation of the numbers of the bills and names of the Representatives and Senators comprising the committees in the respective bodies.

SIXTH DISTRICT PHARMACY BOARDS MEET IN SAN ANTONIO.

The Sixth District annual meeting of the National Association of Boards of Pharmacy, comprising Texas, Oklahoma, Kansas, Arkansas, Missouri and Louisiana, was held in San Antonio, January 17th and 18th. The semiannual meeting of the Texas State Board of Pharmacy was held in San Antonio on the preceding days of the week. Officials of the Texas Pharmaceutical Association and Southwest Texas Druggists' Association were guests Thursday evening at a banquet given the visitors by the San Antonio retail druggists.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1928–1929.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 3.

December 19, 1928.

To the Members of the Council:

29. Minutes of the First Meeting of the Council. Motion No. 1 (See Council Letter No. 2, page 1244) has been carried and the minutes are approved.

30. Use of the Text of the N. F. V. Motion No. 2 (See Council Letter No. 2, page 1244) and *Motion No. 3* (See Council Letter No. 2, page 12) have been carried.

31. Election of Members. Motion No. 4 (See Council Letter No. 2 page 1244) and *Motion No. 5* (See Council Letter No. 2, page 1245) have been carried and applicants for membership numbered 1 to 52 inclusive and applicants for membership numbered H-1 to H-7 inclusive are declared elected.

32. Selection of Auditors. Chairman Koch of the Committee on Finance recommends the employment of W. A. Johnson & Company, Baltimore, Md., to audit the accounts of the ASSOCIATION in accordance with Article 8 of Chapter IV of the By-Laws. This company has acted in this capacity for a number of years.

(*Motion No. 6.*) *It is moved by Koch that W. A. Johnson and Co. be employed to audit the accounts of the Association for 1928.*

33. Increase in the Appropriation for 1928 for the Headquarters Building Campaign Committee. The following letter has been received from Chairman Dunning:

> "The interest received from the Headquarters Building Fund for the semi-annual period ending June 1, 1928, amounted to $4495.11 and the interest for the semi-annual period ending December 1, 1928, will amount to approximately, $4150.00, bringing the total for the year to, approximately, $8650.00.
>
> "I am asking that the appropriation for the Headquarters Building Campaign be increased $6000 to $8500.00, which will cover the expenses for the year."

The interest received from the Headquarters Building Fund for the semi-annual period ending December 1, 1928, amounted to $4180.03.

This request was referred to the Committee on Finance and Chairman Koch writes:

> "A motion to increase the appropriation for the Headquarters Building Campaign for 1928 from $6000 to $8500 is approved."

(*Motion No. 7.*) *It is moved by Dunning that the appropriation for the Headquarters Building Campaign for 1928 be increased to $8500.00.*

34. Appropriation for Committee on Biological Products. No appropriation was made for the expenses of this committee in the budget for 1928. The chairman writes that expenses to the amount of $26.70 have been incurred and the Committee on Finance approves an appropriation to cover this amount.

(*Motion No. 8.*) *It is moved by Kelly that $26.70 be appropriated for the expenses of the Committee on Biological Products.*

35. Use of the Text of the N. F. V. The following communication has been received from Chairman DuMez of the Committee on Publications:

> "I have before me the request of Dr. A. R. Bliss to use certain portions of the text of the National Formulary in a book on Materia Medica for Pharmacy Students.
>
> "I find that Dr. Bliss has had permission to do this in a previous edition of his book, and therefore see no good reason why it should not again be given him. I am therefore recommending to the Council that permission to use certain portions of the text of the National Formulary V in a textbook on Materia Medica for Pharmacy Students be granted, and that a nominal fee of $5.00 be charged for this purpose."

(*Motion No. 9.*) *It is moved by DuMez that Dr. A. R. Bliss, Jr., be granted permission to use the text of the N. F. V for partial reproduction in his book on Materia Medica for Pharmacy Students and at the usual charge of $5.00.*

36. Contract for Printing and Mailing the Journal of the A. Ph. A. for 1929. The following communication has been received from Chairman DuMez of the Committee on Publications:

"I have in hand the bids obtained by Editor Eberle on the cost of publishing the JOURNAL of the Association for 1929.

"After having given these bids fairly close study, I find that there will be no advantage to the ASSOCIATION in changing the publisher at this time.

"Since there is nothing new or unusual in these bids, I see no reason for placing them before the Publication Committee. As Chairman of that Committee, I am therefore recommending to the Council that our contract with the Mack Printing Company for the publication of the JOURNAL be renewed for the coming year, the terms to be the same."

(*Motion No. 10.*) *It is moved by DuMez that the contract for printing and mailing the Journal for 1929 be awarded to the Mack Printing Company of Easton, Penna.* At the request of Chairman DuMez, a vote on this motion is called for at this time but will be considered as tentative if there is objection.

37. Budget for 1929. The Committee on Finance, through its Chairman, presents to the Council the following list of appropriations to cover the various expenditures of the ensuing fiscal year, in accordance with Article II of Chapter II of the By-Laws of the Council.

APPROPRIATIONS FOR GENERAL EXPENSES.

No. 1 Salaries	$11,700.00
No. 2 Rent	1,020.00
No. 3 Telegraph and Telephone	200.00
No. 4 Clerical Expenses	1,500.00
No. 5 Printing, Postage and Stationery	1,300.00
No. 6 Office Supplies	150.00
No. 7 Traveling Expenses	1,300.00
No. 8 Premium on Bonds	60.00
No. 9 Auditing	75.00
No. 10 Certificates	50.00
No. 11 Miscellaneous Expenses	150.00
No. 12 Scientific Section	25.00
No. 13 Section on Education and Legislation	25.00
No. 14 Section on Practical Pharmacy and Dispensing	25.00
No. 15 Section on Commercial Interests	25.00
No. 16 Section on Historical Pharmacy	25.00
No. 17 Commission on Proprietary Medicines	50.00
No. 18 Committee on Local Branches	25.00
No. 19 Committee on Membership	1,000.00
No. 20 Committee on State and National Legislation	100.00
No. 21 Committee on Syllabus	50.00
No. 22 Committee on Standards of Drugs and Chem. Prod.	50.00
No. 23 Committee on Colored Glass Containers	50.00
No. 24 Drug Trade Bureau of Public Information	400.00
No. 25 International Pharmaceutical Federation	120.00
No. 26 Metric Association	10.00
No. 27 American Conference on Hospital Service	25.00
No. 28 Headquarters Building Campaign	6,000.00
No. 29 Year Book	4,500.00
No. 30 Library	100.00
	$30,110.00

APPROPRIATIONS FOR OPEN ACCOUNTS.

No. 31 JOURNAL		
(*a*) Publication	$9,500.00	
(*b*) Clerical Expenses	1,000.00	
(*c*) Postage and Stationery	300.00	
(*d*) Freight, Drayage and Miscell.	200.00	
		$1,1,000.00
No. 32 National Formulary		1,000.00
No. 33 Recipe Book		1,000.00
No. 34 Badges and Bars		50.00
		$13,050.00
		$43,160.00

(*Motion No. 11.*) It is moved by Koch that the Budget for 1929 as submitted be approved.

38. Applicants for Membership. The following applications, properly endorsed and accompanied by the first year's dues have been received.

No. 53, Karl J. Bauer, 435 Jackson St., Waukegan, Ill.; No. 54, T. W. Bishop, 611 South 4th St., Kelso, Wash.; No. 55, George E. Byers, 1642 No. Edgewood St., Philadelphia, Pa.; No. 56, Fae Churney, 2570 W. 15th Place, Chicago, Ill.; No. 57, Walter C. Dietrich, 208 So. 3rd St., Philadelphia, Pa.; No. 58, N. Ernest Dyer, 314 26th St., Union City, N. J.; No. 59, Ronald A. Ferguson, 4541 19th Ave., N. E., Seattle, Wash.; No. 60, Albert P.

Gegenheimer, 3096 Mayfield Rd., Cleveland Heights, Ohio; No. 61, S. Paul Hanig, 1526 Roselyn St., Philadelphia, Pa.; No. 62, Albert Henry Kelley, 1956 4th Ave. W., Seattle, Wash.; No. 63, Clarence Wilber Loan, 4508 16th St., N. E., Seattle, Wash.; No. 64, Laurence D. Lockie, 3503 Main St., Buffalo, N. Y.; No. 65, George Christian Mack, Jr., 515 34th Ave., Seattle, Wash.; No. 66, George Miller, Fenway Hall, Cleveland, Ohio; No. 67, Louis P. Miller, 3328 Carnegie St., Cleveland, Ohio; No. 68, Leonilda Teresita Mozzone, 421 24th St., Seattle, Wash.; No. 69, Arthur Osol, 315 W. Louden St., Philadelphia, Pa.; No. 70, James Edward Porter, P. O. Box 785, Syracuse, N. Y.; No. 71, Kenneth Redman, Melbourne, Wash.; No. 72, Milton M. Schatz, 5236 15th St., N. E., Seattle, Wash.; No. 73, Harold B. Smith, 5012 22nd St., N. E., Seattle, Wash.; No. 74, Manton J. Spear, 107 Cottage Ave., Cashmere, Wash.; No. 75, Graydon L. Walker, Smart Apt. No. 311, Seattle, Wash.; No. 76, Harold W. Werner, 1234 W. Union St., Gainesville, Fla.; No. 77, Charles L. Wible, College of Pharmacy, Univ. of Nebraska, Lincoln, Nebr.; No. 78, John M. Woodside, 2902 Richmond St., Philadelphia, Pa.

(*Motion No. 12.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

39. Applicants for Membership on Account of Contributions to the Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

H-8, Claude Rhae Carson, 21 N. Lewis St., Staunton, Va.; H-9, Philip Nyman, 51 Heard St., Chelsea, Mass.

(*Motion No. 13.*) *Vote on applications of contributors to the Headquarters Building Fund for membership in the American Pharmaceutical Association.* E. F. KELLY, *Secretary.*

SALE OF MEDICINES IN LATIN AMERICA.

American manufacturers and exporters of medicinals and pharmaceuticals will be interested in the announcement by the Foreign Tariffs Division of the U. S. Department of Commerce of the completion, in mimeographed form, of regulations governing the importation and sale of prepared medicines and allied products in the Latin American countries. The first two circulars, Colombia and Paraguay, have been finished. The third and fourth, devoted to Guatemala and Uruguay, will follow shortly.

MALARIA PREPARATIONS MUST COMPLY WITH FOOD AND DRUGS ACT.

The conclusion of the officials of the Food, Drug and Insecticide Administration of the United States Department of Agriculture, who in a survey made during the last year examined more than fifty such preparations, is that few of the preparations on the market labeled as treatment for malaria contain medicament sufficient to constitute adequate treatment for malaria.

It is well known that quinine, say the officials, if administered in sufficient quantities and over a sufficient period of time, will destroy the parasite that causes malaria. Some of the other cinchona alkaloids also are recognized as having anti-malaria virtue if administered in comparable dosage. The United States Pharmacopœia gives 15 grains daily as the average anti-malaria dose of quinine and several of its salts. It is the concensus of present-day medical opinion that this daily dosage continued for a period of eight weeks without interruption will usually suffice to prevent a relapse of the disease.

It is the intention of the Department of Agriculture to take active steps in the immediate future to effect suitable changes in the formulas for the various preparations on the market labeled for the treatment of malaria which do not contain adequate quantities of the cinchona alkaloids to meet the requirements for the treatment of the disease. Changes in the labeling will also be insisted upon where the claims made are unwarranted by the composition of the preparation. Included in these changes will be the omission of disease names for which the preparation is not a recognized competent treatment.

The Department of Agriculture assumes that in many cases the manufacturer will voluntarily make any necessary changes in their preparations or in their labelings to bring them into harmony with the provisions of the Federal Food and Drugs Act. In those cases in which this is not done appropriate legal action will be taken.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON STANDARDS OF DRUGS AND CHEMICAL PRODUCTS.*

BY B. L. MURRAY, CHAIRMAN.

To the Members of the American Pharmaceutical Association:

The Chairman reports that it has been a year of profitable endeavor on the part of the Committee, unusual interest having been shown in the work by the various members. About 25 drugs are now under study.

Monographs have been completed on

Absinthium Kamala Areca Salvia

and are herewith attached.

Monographs for the following drugs are in the hands of the Chairman and ready for submission to the members of the Committee: Dill Fruit, Arnica Root, Anthemis.

Monographs for the following drugs are at present in the process of preparation:

Aspidosperma	Levisticum	Achillea
Calabar bean	Mallow Flowers	Agrimonia
Cascarilla	Marrubium	Carthamus
Chenopodium	Menyanthis	Chelone
Comfrey Root	Rue	Eupatoreum Purpureum
Coto	Sweet Marjoram	Polygonum
Paracoto	Tilia	Tanacetum
Dill Herb	Verbena	Lactuca Canadensis.
Hedeoma	Wild Thyme (Thymus Serpyllum)	

Various changes in the personnel of the Committee have occurred. We have lost by death Mr. G. M. Beringer, who was a former Chairman of this Committee and under whose direction much constructive work was done. Dr. George Rosengarten and Dr. W. A. Puckner have resigned owing to changed conditions and interests on their part.

It is felt that with the good start the Committee has, much can be accomplished in the preparation of these standards for unofficial drugs during the ensuing year.

ABSINTHIUM.

Old Woman.—Wormwood.

Absinth.

Absinthium consists of the dried leaves and flowering tops of *Artemisia Absinthium* Linné (Fam. *Compositæ*).

Absinthium contains not more than 3 per cent of its stems over 4 mm. in diameter or more than 2 per cent of other foreign organic matter, and yields not more than 2 per cent of acid-insoluble ash.

Description and Physical Properties.

Unground Absinthium.—Stems and leaves gray-green, finely silky hairy and glandular throughout; largest leaves up to 12 cm. in length and of nearly equal breadth, on long petioles, two to three times pinnately divided or lobed, the ultimate segments oblong or obovate, obtuse, entire or slightly toothed; upper leaves shorter petioled, small and narrower, the uppermost being about 2 cm. in length and resembling the ultimate segments of the larger ones; heads racemose-paniculate, drooping on short peduncles, greenish yellow, from 3 to 4 mm. in width, round ovoid, the outer bracts linear-oblanceolate, obtuse, the inner broader and scarious margined; receptacle hairy; outer flowers sometimes pistillate. Odor aromatic, characteristic; taste very bitter.

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* Portland meeting, A. PH. A., August 1928.

Powdered Absinthium.—Brownish to yellowish green. Numerous T-shaped, non-lignified, non-glandular hairs consisting of 2- to 4-, occasionally 5-celled stalks bearing single apical cells attached near the middle, the latter up to about 0.850 mm. in length and 0.035 mm. in width; many of the hairs are collapsed, twisted or broken; glandular hairs with 1- to 2-celled stalks and glandular portions of from 4 to 8 secreting cells surrounded by a membrane; few simple hairs from the flowers, some of which are very long and up to 0.085 mm. in width; fragments of epidermis with broadly elliptical stomata, the latter up to 0.035 mm. in length; fragments of mesophyll and palisade tissue with cells containing chloroplastids; tracheae mostly spiral, occasionally annular or with simple or bordered pores, up to 0.035 mm. in width; few fibers with thick, usually lignified walls and simple pores, up to 0.020 mm. in width; pollen grains few, spherical or triangular, up to 0.030 mm. in diameter; calcium oxalate rosettes up to 0.010 mm. in diameter.

ARECA.

Betel Nut, Areca Nut.

Areca is the dried seed of *Areca Catechu* Linné (Fam. *Palmæ*).

Areca yields not more than 1 per cent of acid-insoluble ash.

Description and Physical Properties.

Unground Areca.—Rounded-conical, up to about 2.75 cm. in length and 2.9 cm. in diameter; apex bluntly rounded, base flattened and with a shallow central depression, the latter usually bearing remains of a fibrous pericarp; outer surface grayish brown, marked by many broad, branching veins, running spirally from base to apex; internally brownish red with whitish veins, a horny ruminate endosperm and a small embryo near the base; fracture hard, horny. Odor on fracturing faint; taste astringent.

Structure.—Tissue consists chiefly of endosperm cells containing aleurone grains and having peculiarly thickened, non-lignified walls with large simple pores; through this endosperm tissue there extends, somewhat radially, toward the center, irregular, wavy bands of the brown seed coat, the latter being made up chiefly of polygonal cells with thin, lignified, brownish walls, many of them with a brownish amorphous content; occasional fibrovascular bundles occur distributed throughout the seed-coat.

Powder.—Reddish brown. Many fragments of endosperm made up of irregular, polygonal cells with thick, colorless walls and large simple pores; portions of the seed-coat with cells having brownish, lignified walls and often a brownish amorphous content; stone cells, somewhat irregular, rounded or triangular in outline, from 0.020 to 0.110 mm. in length; occasional thick-walled, fiber-like cells up to about 0.150 mm. in length.

KAMALA.

Kamila, Rottlera.

Kamala consists of the glandular and non-glandular hairs from the capsules of *Mallotus phillipinensis* (Lamarck) Mueller Arg. (Fam. *Euphorbiaceæ*).

Kamala yields not more than 7.00 per cent of acid-insoluble ash.

Description and Physical Properties.—A brownish red, mobile, finely granular powder with practically no odor or taste. Glandular hairs, yellowish red, consisting of a nearly spheroidal head from 0.050 to 0.110 mm. in diameter made up of from 20 to 50 ellipsoidal, spatulate or club-shaped secretory cells, arranged radially about a short central stalk. Non-glandular hairs, stellate, consisting of from 5 to 20 unicellular, uniseriate, thick-walled hairs, the latter somewhat curved or occasionally hooked at the ends; few fragments of pericarp of the capsules or irregular, angular pieces of inorganic matter.

Kamala is not readily miscible with water, to which it imparts only a light yellow color, upon being boiled; to ether, chloroform or water made alkaline with Sodium Hydroxide T. S. it yields a deep-red solution.

SALVIA.

Sage.

Sage is the dried leaf of *Salvia officinalis* Linné (Fam. *Labiatæ*).

Sage yields not less than 1 per cent of ether-soluble extractive, not more than 25 per cent of crude fiber and not more than 1.5 per cent of acid-insoluble ash.

Description and Physical Properties.

Unground Sage.—Oblong lanceolate or ovate, 2 to 10 cm. in length and 1 to 2.5 cm. in width; apex acute or rounded, base rounded, frequently lobed or somewhat heart-shaped; margin finely crenulate; upper surface grayish green, densely pubescent in the younger leaves, nearly smooth in the older ones, midrib and veins depressed; lower surface light grayish green, densely pubescent, minutely reticulate; petiole grayish purple, from 1 to 4 cm. in length. Odor characteristic, aromatic; taste aromatic and bitter.

Structure.—An upper epidermis of cells polygonal in surface view and with slightly wavy vertical walls; non-glandular hairs, 1 to 5 cells in length, uniseriate, sharp-pointed, the basal cell usually filled with air; glandular hairs with 2- to 4-celled stalks and 1-celled heads or with 1-celled stalks and 2-celled heads or a stalkless hair with an 8-celled head; two layers of palisade cells and about 4 rows of loose parenchyma cells, beneath which occurs the lower epidermis, the vertical walls of which are thin and very wavy; stomata are enclosed between pairs of crescent-shaped epidermal cells with the long axis at right angles to the wall, common to the two neighboring cells.

Powdered Sage.—Dark green. Numerous fragments of epidermal tissue bearing broadly elliptical stomata from 0.018 to 0.030 mm. in length; many uniseriate, sharp-pointed non-glandular hairs from 0.150 to 0.770 mm. in length; glandular hairs with a reddish or yellowish amorphous content, those with 8-celled heads measuring from 0.045 to 0.095 mm. in diameter; fragments of the mesophyll and palisade tissue with cells bearing chlorophyll or other protoplasmic contents.

REPORT OF THE COMMITTEE ON INTERNATIONAL PHARMACEUTICAL NOMENCLATURE.*

BY A. G. DUMEZ, CHAIRMAN.

To the Members of the American Pharmaceutical Association:

In 1924, your Committee expressed the opinion that its labors would be most productive if it were to coöperate with the Committee on International Nomenclature of the Federation Internationale Pharmaceutique. Shortly thereafter, the Chairman of your Committee addressed a communication to the Chairman of the Federation's Committee and since then he has been in constant touch with that Committee.

You will no doubt recall that several years ago the Federation's Committee prepared a table of Latin titles official in the different national pharmacopœias. During the past year, this Committee has directed its efforts to devising a suitable nomenclature for items marketed under protected names. The report on this work, which has just been received, contains a list of names of seventy pharmacopœial items of this class derived by the application of the following rules:

1. The title shall be formed by simple contraction of the scientific name, suppressing the least characteristic syllables, *e. g.*,

Acetosalicylic acid—Acetosal.

Hexamethylenetetramine—Hexamine.

2. Anesthetics shall terminate in "caine," like cocaine, *e. g.*,

Ethyl aminobenzoate—Benzocaine.

Ethyl aminooxybenzoate—Salicaine.

3. Hypnotics derived from barbituric acid shall terminate with "barbital," *e. g.*,

Diethylbarbituric acid—Barbital.

Phenylethylbarbituric acid—Phenobarbital.

4. Colloidal combinations of silver shall be named after the colloid protector which they contain, *e. g.*,

Protargol—Protargentum.

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* Portland meeting, A. PH. A., August 1928.

Argyrol—Nuclargentum.
Albargine—Gelargentum.

The complete list of names, which is attached to this report, shows that sixteen have already been adopted as official titles by the United States Pharmacopœia and that very probably a number of the others could be adopted with advantage. In fact, all of the others are worthy of serious consideration by the next Revision Committee.

Any movement which has for its object the achievement of international uniformity in a definite field must be one of slow growth. That of arriving at uniformity in pharmaceutical nomenclature is no exception to the rule, but there is evidence that progress is being made. The work of the Federation Internationale Pharmaceutique has been going on for the past six years and every year a little more is accomplished as the foregoing report indicates. In 1925, the International Conference for the Unification of Potent Remedies, which met in Brussels, adopted a fairly comprehensive set of rules for the unification of pharmacopœial nomenclature and already the influence of this act has manifested itself in the nomenclature of some of the pharmacopœias which have been published since that time. No doubt the pharmacopœias now undergoing revision will show still greater progress along this line.

While your Committee as a whole has been inactive, its members have coöperated individually with the other national bodies where they have been called upon to do so and it is believed that in this way we have contributed materially to the progress which has been made.

Respectfully submitted,
A. G. DuMez, *Chairman*.

FEDERATION COMMITTEE'S LIST.

Trade name.	Chemical name.	Substitute.	Source.
ACETYLUM	**Acidum acetylosalicylium**	Acetosalum	Comm.
ADALIN	**Diæthylobromoacetylureum**	Carbromalum	U. S.
ADRENALIN	**Laevo-Methylamino-aethanol-catechol**	Epinephrina	U. S.
AETHOCAIN	**Hydrochloras *p*-Aminobenzoyldiaethylaminoaethanoli**	Procaina	U. S.
AIROL	**Gallas oxyjodeto-bismuthicus**	Gallabis jodatum	Comm.
ALBARGIN	**Argentum gelatosatum**	Gelargentum	Comm.
ANAESTHESIN	**Aminobenzoas aethylicus**	Benzocaina	U. S.
ANTIPYRIN	**Phenyldimethylisopyrazolon**	Phenazonum	Britt.
APYRON	**Acetylosalicylas lithicus**	Lithacetosalum	Comm.
ARGYROL	**Nucleinas argenticus**	Nuclargentum	Comm.
ARISTOL	**Dithymoldijodide**	Joodthymolum	Comm.
ARRHENAL	**Methylarsinas natricus**	Methylarsinum	Comm.
ARRHEOL	**Santalol**	Santalolum	Comm.
ASPIRIN	**Acid. acetylosalicylic**	Acetosalum	Comm.
ASPIRIN SOLUBILE	**Acetylosalicylas calcicus**	Calcacetosalum	Comm.
ATOPHAN	**Acid. phenylcinchoninicum**	Cinchophenum	U. S.
BOROVERTIN	**Boras Hexamethylenetetramini**	Boras Hexamini	Comm.
BROMURAL	**Bromoisovalerianylureum**	Bromeval	Comm.
CRYSTALLOSE	**Benzosulfinide-natrium**	Saccharoidas natricus	Neerl.
DERMATOL	**Gallas bismuthicus basicus**	Gallabis	Comm.
DIAL	**Acidum diallylbarbituricum**	Allylbarbitalum	Comm.
DIGALEN	**Liquor Digitalis**	Digisol	Neerl.
DIGIPAN	**Liquor Digitalis**	Digisol	Neerl.
DIONIN	**Hydrochloras Aethylmorphini**	Aethomorphinum	Comm.
DIPLOSAL	**Acidum salicylo-salicylicum**	Disalyl	Comm.
DIURETIN	**Salicyl. natric. c. Theobr.-Natrio**	Theobromsalum	Comm.
EUCHININ	**Aethylcarbonas Chinini**	Aecachininum	Comm.
EUPHORIN	**Phenylurethan**	Phenylurethanum	Comm.
GARDENAL	**Acid. phenylaethylobarbituricum**	Phenobarbitalum	U. S.

HELMITOL	Anhydromethylenocitras Hexamethylentetramini	Citrohexal	Comm.
HEROIN	Diacetylmorphinum	Diamorphina	Britt.
HYDROPYRIN	Acetylosalicylas lithicus	Lithacetosalum	Comm.
ICHTHYOL	Sulfoichthyolas ammonicus	Bithiolum	Comm.
LEVURIN	Pulvis Saccharomycetis Cerevisiae	Faex compressa	Helv.
LUMINAL	Acid. phenylaethylobarbituricum	Phenobarbitalum	U. S.
LUMINAL-NATRIUM	Phenylaethylobarbituras natricus	Phenobarbitalum solubile	U. S.
MEDINAL	Diaethylobarbituras natricus	Barbitalum solubile	U. S.
MESOTAN	Salicylas methoxymethylicus	Salicylas methoxymethylicus	Comm.
MIGRAININ	Antipyrinum c. Coffeino et Acido citrico	Coffeopyrinum	Comm.
NOVASPIRIN	Acidum methyleno-citrylo-disalicylicum	Citrodisalyl	Comm.
NOVATOPHAN	Phenylcinchoninas methylicus	Methylcinchophenum	Comm.
NOVOCAIN	Hydrochloras *p*-Aminobenzoyldiaethylaminoaethanoli	Hydrochloras Procainae	U. S.
OPTOCHINEHYDROCHLORIDE	Hydrochloras Aethylhydrocupreini	Hydrochloras Aethocupreini	Comm.
ORTHOFORM	*p*-Amino-*m*-oxybenzoas methylicus	Salicainum	Comm.
PANTOPON	Hydrochlorates Alcaloideorum Opii	Toponalum	Comm.
. . .	Hydrochlorates Alcaloideorum principalium Opii (Cum chloreto natrico)	Opialum	Neerl.
PELLIDOL	Diæetylamidoazotoluol	Diacetazotolum	Comm.
PERHYDROL	Solutio Peroxydi Hydrogenii 30 %	Peroxyd. Hydrog. 30 %	
PROPONAL	Acidum dipropylobarbituricum	Propylbarbitalum	Comm.
PROTARGOL	Argentum proteinicum (Helv.) Argentum proteinatum (Suec.)	Protargentum	Comm.
PYOKTANINUM AUREUM	Hydrochloras Imidotetramethyldi-*p*-amido-diphenylmethane	Auraminum	Comm.
PYOKTANINUM COERULEUM	Methylrosanilinum	Methylviolet	Suec.
PYRAMIDON	Dimethylaminophenyldimethylpyrazolon	Amidopyrinum	Suec.
SACCHARIN	Benzosulfinidum	Saccharoidum	Neerl.
SAJODIN	Calciumjodobehenaat	Calioben	U. S.
SALIFORMIN	Salicylas Hexamethylentetramini	Salicylas Hexamini	Comm.
SANAPERIN	Acidum acetylosalicylicum	Acetosalum	Comm.
SOMBEN	Diaethylbromacetylureum	Carbromalum	U. S.
STYPTICIN	Hydrochloras Cotarnini	Hydrochloras Cotarnini	Comm.
SUPRARENIN	Methylamino-æthanol-catechol	Epinephrina synth.	U. S.
TANNALBIN	Albumen tannicum	Tannalbuminum	Neerl.
TANNIGEN	Acidum diacetyltannicum	Acetanninum	U. S.
TANNOFORM	Methylenditanninum	Metanninum	Comm.
TRIONAL	Methylsulfonal	Methylsulfonalum	Neerl.
UROTROPIN	Hexamethylentetraminum	Hexamina	Britt.
VALIDOL	Valerianas menthylicus	Menthovalum	Comm.
VERAMON	Diæthylobarbituras Pyramidoni	Barbipyrinum	Dan.
VERONAL	Acid. diaethylobarbituricum	Barbitalum	U. S.
VERONAL-NATRIUM	Diæthylobarbituras natricus	Barbitalum solubile	U. S.
XEROFORM	Tribromophenolbismuth	Phenobis bromatum	Comm.

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, H. A. B. DUNNING, H. C. CHRISTENSEN, J. A. KOCH, J. H. BEAL, W. B. DAY, T. J. BRADLEY. *Ex-Officio Members:* D. F. JONES, *President;* A. W. PAULEY, W. H. ZEIGLER, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* AMBROSE HUNSBERGER, *Chairman of the House of Delegates.*

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NEW AND NONOFFICIAL REMEDIES.

The following additional articles have been accepted as conforming to the Rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the Rules on which the Council bases its action will be sent on application.

W. A. PUCKNER, *Secretary.*

ETHYLHYDROCUPREINE.

Ethylhydrocupreine is a synthetic derivative of cupreine $C_{19}H_{22}O_2N_2$, an alkaloid occurring together with quinine in the bark of *Remijia pedunculata.* It is closely related to quinine, differing from the latter in containing two more hydrogen atoms and an ethoxy group in place of a methoxy group. Ethylhydrocupreine has the antimalarial and anesthetic action of quinine. Toxic symptoms, however, such as tinnitus, deafness, amblyopia or amaurosis (retinitis) are more liable to occur than with quinine. While these are generally transient, retinitis may result in permanent impairment of vision (in one case, amaurosis resulted from the administration of two 0.25 Gm. doses of the hydrochloride). This demands caution in the administration of the drug. Ethylhydrocupreine has a specific bactericidal effect on the pneumococcus in vitro and it exerts a protective and curative action in animals experimentally infected with virulent strains of pneumococci. Clinical investigation indicates that the drug may be of value in the treatment of lobar pneumonia, if a sufficient amount can be administered sufficiently early without untoward effect. To avoid such effect, it is proposed to secure slow absorption through the administration of the free base by mouth. The hydrochloride may be administered intramuscularly, but it is liable to be irritant. Intravenous administration seems to be contraindicated. The drug has a definite value in the treatment of pneumococcic infections of the eye (ulcus corneae serpens).

OPTOCHIN BASE.—Optochin. Ethylhydrocupreine.—$C_{19}H_{22}N_2OH.OC_2H_5$.

Actions and Uses.—See preceding article, Ethylhydrocupreine.

Dosage.—Optochin base is administered orally in doses of 0.25 Gm. (4 grains) every five hours for three days, each dose being accompanied by 150 cc. (5 fluidounces) of milk to retard absorption. If auditory or visual disturbances develop, the use of the drug is to be suspended. For children a proportionate dose is administered.

Manufactured by Merck & Co., Inc., Rahway, N. J., under U. S. patent 1,062,203 (May 20, 1913; expires 1930) by license of the Chemical Foundation, Inc. U. S. trademark 99822.

Tablets Optochin Base, 2 grains.

Optochin base is a white or faintly yellowish amorphous odorless powder, having a bitter taste. It is almost insoluble in water, soluble in alcohol, ether, chloroform, and in diluted mineral acids; slightly soluble in petroleum benzin.

Dissolve about 0.1 Gm. of optochin base in 20 cc. of water by the aid of a few drops of diluted sulphuric acid; add 1 cc. of bromine water and make the solution alkaline with ammonia water: a green color is produced. Dissolve about 0.5 Gm. of optochin base in water by means of a few drops of diluted sulphuric acid; render the solution alkaline by addition of sodium hydroxide solution and boil the mixture: no odor of ammonia develops. Dissolve about 0.1 Gm. of optochin base in 20 cc. of water by the aid of a few drops of diluted sulphuric acid: a blue fluorescent solution is produced. Add 0.3 cc. of tenth-normal potassium permanganate solution to this solution; the violet color persists for at least one minute (*quinine and some other impurities*). Dissolve about 0.01 Gm. of optochin base in 0.2 cc. of sulphuric acid, U. S. P.; not more than a slightly greenish yellow color is produced (*readily carbonizable organic impurities*).

Incinerate from 0.8 to 1 Gm. of optochin base, weighed accurately; not more than 0.1 per cent of ash remains.

OPTOCHIN HYDROCHLORIDE.—$C_{10}H_{22}N_2OH.O.C_2H_5HCl$.—The hydrochloride of ethylhydrocupreine.

Actions and Uses.—See preceding article, Ethylhydrocupreine.

Dosage.—For application to the eye and instillation into the conjunctival sac, a freshly prepared 1 or 2 per cent solution is used. It is not recommended for oral administration.

Manufactured by Merck & Co., Inc., Rahway, N. J., under U. S. patent 1,062,203 (May 20, 1913; expires 1930) by license of the Chemical Foundation, Inc. U. S. trademark 99822.

Optochin hydrochloride is a white or faintly yellowish white crystalline, odorless powder, having a very bitter taste. It is soluble in 2 parts of warm water, forming a neutral or faintly alkaline solution; soluble in 5 parts of alcohol; very soluble in chloroform; almost insoluble in ether or petroleum benzin.

To 5 cc. of an aqueous solution of optochin hydrochloride (1 in 10) add 1 cc. of silver nitrate solution: a white, curdy precipitate is formed which is insoluble in nitric acid. To 5 cc. of an aqueous solution of optochin hydrochloride (1 in 10) add an excess of sodium hydroxide solution: a white curdy precipitate is produced (*distinction from cupreine, which is soluble in an excess of sodium hydroxide*). Dissolve about 0.1 Gm. optochin hydrochloride in 20 cc. of water and add 0.3 cc. tenth-normal potassium permanganate: the violet color persists for at least 1 minute (*quinine salts and some other impurities*). Dissolve about 0.01 Gm. of optochin hydrochloride in 0.2 cc. of sulphuric acid, U. S. P.: not more than a slightly greenish yellow color is produced (*readily carbonizable organic impurities*).

Accurately weigh from 0.5 to 0.8 Gm. of optochin hydrochloride; dissolve it in about 20 cc. of water in a separator made slightly alkaline with ammonia water and extract the mixture successively with 15, 10 and 5 cc. of chloroform; allow the extractions to evaporate spontaneously; treat the residue with 2 cc. of alcohol; allow the alcohol to evaporate and dry the residue to constant weight at 100 C.: the weight of the residue (ethyl-hydrocupreine) corresponds to not less than 90 per cent of the weight of material taken for the assay.

PROTARGENTUM-SQUIBB (See New and Nonofficial Remedies, 1928, p. 397).

The following dosage form has been accepted:

Tablets Protargentum-Squibb, 4.6 grains.

SOLARGENTUM-SQUIBB (See New and Nonofficial Remedies, 1928, p. 398).

The following dosage form has been accepted:

Tablets Solargentum-Squibb, 4.6 grains.

EPHEDRINE HYDROCHLORIDE-ABBOTT (See New and Nonofficial Remedies, 1928, p. 176).

The following dosage form has been accepted:

Capsules Ephedrine Hydrochloride-Abbott, 1/8 grain.

ANTIMENINGOCOCCUS SERUM (See New and Nonofficial Remedies, 1928, p. 359).

Eli Lilly & Co., Indianapolis.

Antimeningococcus Serum Concentrated, Lilly.—Refined and concentrated by the Banzhaf method. Marketed in packages of one 1-cc. double ended vial with apparatus for intraspinal injection.

ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1928, p. 361).

Eli Lilly & Co., Indianapolis.

Antistreptococcic Serum, Purified and Concentrated, Lilly.—A polyvalent serum prepared by immunizing horses against virulent strains of the various streptococcus groups. Marketed in packages of one 10 cc. syringe and in packages of one 10-cc. vial.

EPHEDRINE SULPHATE-P. D. & CO. (See New and Nonofficial Remedies, 1928, p. 178).

The following dosage form has been accepted:

Capsules Ephedrine Sulphate-P. D. & Co., 0.025 Gm. (3/8 grain).

From *Jour. A. M. A.*, Nov. 24, 1928.

UNITED STATES CIVIL SERVICE EXAMINATIONS.

The United States Civil Service Commission announces the following open competitive examinations: *Toxicologist*, $3800 to $4400 a year; *Associate Toxicologist*, $3200 to $3700 a year; *Assistant Toxicologist*, $2600 to $3100 a year.

Applications for the above-named positions must be on file with the Civil Service Commission at Washington, D. C., not later than January 23rd.

The examinations are to fill vacancies in the Bureau of Mines, Department of Commerce, for duty in Washington, D. C., or in the field; in the Chemical Warfare Service, War Department, for duty at Edgewood Arsenal, Edgewood, Maryland; and vacancies occurring in positions requiring similar qualifications. The duties are conducting or assisting in conducting experimental investigative work on the physiological action of toxic compounds.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

TOXIC ACTION OF ETHYLENE DIBROMIDE.

In the course of a study of ethyl gasoline by the United States Bureau of Mines, B. G. H. Thomas and W. P. Yant (*Pub. Health Rep.*, 1927, 42, 370–375) investigated the action of ethylene dibromide on animals. This compound, which is a volatile liquid with a choloroform-like odor, occurred in the ethyl gasoline in the ratio of 2 cc. per gallon.

Ethylene dibromide was sufficiently toxic to kill guinea-pigs and rats, but its minimum lethal dose was not determined. Guinea-pigs were made to breathe air containing ethylene dibromide vapor for 1 hour; the concentration of the vapor in the air was such that

0.4 cc. of ethylene dibromide was actually inhaled. Death resulted in 6 to 18 hours. Application of 0.25 cc. of ethylene dibromide gradually to an area of skin 2 centimeters square on the abdomen of rats likewise produced death in 6 to 18 hours. Post-mortem examination of the animals, which had died from this acute poisoning, revealed a putrid, mushroom-like odor and degenerative changes in the vascular system and the viscera, especially in the kidneys.

Ethylene dibromide had approximately the same toxicity as lead tetraethyl, but did not have a cumulative action. Ethylene dibromide is a distinct industrial health hazard, chiefly in its manufacture.—J. S. H. in *Jour. Franklin Inst.*

COLOR REACTIONS OF INSULIN—A CHEMICAL REACTION FOR VITAMINS AND HORMONES.

E. Christensen, *Münch. med. Wochschr.*, 75, 1883 (1928), No. 44; through *Squibb Abstract Bulletin*, December 5, 1928.

The author found that the other vitamins gave the same color reaction with phosphorus pentoxide as did Vitamin D, rice bran, carrots, butter, etc., giving the same reddish brown to black coloration as do Vigantantol or cod-liver oil (see Stoeltzner's and Fearon's work). The author then similarly tested hormones and found that testicular and ovarian preparations and a large number of commercial insulin preparations all gave a positive P_2O_5 reaction, in varying degree, the activity and therapeutic value run parallel in the various insulin preparations. In the examination of solid insulins, the author recommends mixing the insulin with an equal amount of the P_2O_5 in a test-tube and then gradually adding to the mixture drop by drop a few drops of distilled water. The coloration sets in immediately. If several samples are examined at the same time and the test-tubes filled to the same level with distilled water, the various color tones can be compared in an especially good manner. The insulin-Fornet pills examined in this way always give a very marked reaction.—E. G.

THE ROCKEFELLER FOUNDATION.

Two philanthropic institutions founded by John D. Rockefeller "to promote the well-being of mankind throughout the world," which have property with a listed value of more than $223,000,000 were consolidated, January 3rd, by permission of the Supreme Court.

Until the first annual meeting of the new organization in May, the following were appointed as directors and trustees: James R. Angell, Trevor Arnett, John W. Davis, David L. Edsall, Simon Flexner, Raymond B. Fosdick, Jerome D. Greene, Ernest M. Hopkins, Charles P. Howland, Vernon Kellogg, John D. Rockefeller, Jr., Julius Rosenwald, Anson Phelps Stokes, Frederick Strauss, Augustus Trowbridge, George E. Vincent, George H. Whipple, William Allen White, Ray Lyman Wilbur, Arthur Woods and Owen D. Young.

The application for consolidation set the value of the foundation's property at $158,090,543.04, and the memorial's at $65,127,535.42.

TO CELEBRATE IODINE FACTORY ANNIVERSARY.

The little Finistere fishing village, LeConquet, France, is preparing to celebrate the centenary of the establishment of one of its twelve iodine factories. This factory was founded only a few years after the discovery, in the early nineteenth century, of iodine by B. Courtois.

NEW USES FOR IODINE.

The Chilean Iodine Association in a recent meeting decided to withdraw support from the experiments to prove that iodine would make an excellent anti-knock substance for internal combustion engines as no real value seems to be likely to result from them. It is true that experiments have also been carried on for the use of iodine as a cure.

THE DRUG STORE STILL A DRUG STORE.

The *Literary Digest* for December 29, 1928, quotes E. M. West, in *Advertising and Selling*, in reply to an editorial in the *New York World*. Part of Mr. West's article is quoted in the following:

Drugs, chemicals and prescriptions bring in more than double the sales of all other types of commodities sold in the drug stores of these cities.

No other class of commodity, in fact, brought in 10 per cent of the total sales.

Only three other classes reached any considerable volume: candy, ice-cream and soft

drinks; cigars, cigarets and tobaccos; and toilet articles and preparations.

It is not surprising that the soda-fountain has developed to so large a revenue producer. But that tobaccos outstrip toilet preparations will surely surprise many.

With drugs, these three classifications account for over 95 per cent of the total of all sales. Indeed, if other articles of food, sold at the soda counter, are included, the total porportion becomes 96.877 per cent of the aggregate sales, leaving only 3.123 per cent for all other goods.

This means that all other goods, sold in the drug stores of these nine cities, bring in a bit over four and a half million dollars out of a total sale of $149,899,200.

This is a little more than $1000 a year per store for the 4340 drug stores in these cities.

Of the eleven representative cities canvassed by the Government's agents, Fargo, North Dakota, and Springfield, Illinois, are omitted because the volume of sales in their drug stores was not "broken down." Drug store sale totals were as follows in the other nine cities:

Chicago	$70,148,800
San Francisco	19,344,700
Kansas City	16,255,000
Baltimore	11,059,800
Atlanta	8,516,200
Seattle	7,427,700
Providence	7,125,100
Denver	6,757,200
Syracuse	3,264,700
Total	$149,899,200

According to the writer in the advertising magazine:

Of this $149,899,200, $105,134,200 are for drugs, chemicals and prescriptions; $14,907,900 are for candy, ice-cream and soft drinks; $11,602,700 are for cigars, cigarets and tobaccos; $11,533,800 are for toilet articles and preparations; $2,037,200 are for meals and four other food classifications; and $4,683,400 are for all other (twenty-six) classifications.

The *New Jersey Journal of Pharmacy* is serving a good purpose; the November issue, before us, carries a number of interesting items of news and information. Informing New Jersey pharmacists relative to state laws, association promotions, and acquainting the public with a means whereby its health is safeguarded, are among the aims and purposes of the publication edited by Secretary R. P. Fischelis. "Who is qualified to sell drugs" is an article of the December issue.

The *West Coast Druggist* is the product of the Stirring Road and the California Retail Drug Journal. The publication is a monthly devoted to the interests of the drug trade, particularly those of seven western states and the Hawaiian Islands. Sidney J. Wolf is the publisher.

D. O. Haynes & Co. announces the sale of *Drug Trade Weekly* to the Bredan Publishing Corporation, of which Magnus Bredenbek is president and F. H. Anspacher, secretary—both of them were formerly connected with D. O. Haynes & Co.

Dr. Hans Meyer, editor of the *Apotheker Zeitung* has reprinted the articles appearing in that publication, following the visit of the German Apothecaries in the United States. Taken as a whole the contributions are good, but selective, to the extent of making deductions of what the visitor saw and heard along with the many other things to be seen and heard during a brief visit covering considerable mileage.

The Romance of Perfume. By RICHARD LE GALLIENNE, with drawings by George Barbier. Published by Richard Hudnut, New York and Paris. The book is beautifully illustrated and throughout is a work of art; its printed and illustrated pages speak of perfume, without the necessity of writing the word; but, the romance and the story of perfumes is told, interestingly and historically—it is well worth a place in the library.

Schimmel's Report for 1927. The English edition of the report on essential oils and synthetic perfume materials, published by Schimmel & Co., Militz, Germany, has been issued for 1927. It contains scientific notes on essential oils, a special item on Bulgarian geranium oil, notes on the oils and related products in the new pharmacopœias of Germany, Holland and Russia, discussions of chemical preparations and drugs, and a great number of notes on scientific research in the chemistry of odorous substances. The report is distributed in this country by Fritzsche Brothers, Inc., 82 Beekman St., New York, the sole agent for Schimmel & Co., in the United States and Canada. In an introductory note the publishers say the English edition will be discontinued, on account of the heavy cost of its

publication. This step is regretted by many and it is hoped that developments will enable the firm to again take up the publication of the English translation.

PERSONAL AND NEWS ITEMS.

Carl Weeks, accompanied by Paul Zimmer spent several days in the pheasant fields of South Dakota during November. They motored to the home city of the A. PH. A. President, D. F. Jones, where the Watertown pharmacists were invited to join with visitors at a banquet; among them, Mr. and Mrs. George Sherman, of Huron; Mr. and Mrs. W. P. Loesch, of Oldham; Mr. and Mrs. E. M. Jones, of Clark, Dean and Mrs. E. R. Serles, of Brookings. A splendid dinner was laid for about twenty-five and in an atmosphere of cheer and good fellowship the menu was enjoyed. Following the dinner, the host spoke on interesting phases of the modern drug store business, its fundamental principles and its problems of competition, old and new.

F. R. Peterson, former president of the N. A. R. D., and at present a member of its Executive Committee, was guest-speaker, November 19th, at a noonday luncheon of the Minneapolis Veteran Druggists' Association and the Minneapolis Retail Druggists' Association held at the Nicollet Hotel.

During mid-November the pharmacy students and faculty of South Dakota State College entertained President **D. F. Jones,** of the A. PH. A.; Dean **Frederick J. Wulling;** President **H. J. Schnaidt; Floyd W. Brown;** Lead, So. Dak., Local Secretary for the A. PH. A. meeting in Rapid City, week of August 26th. **Dean Serles** presided as toastmaster of the banquet. President Jones spoke of the relation of the AMERICAN PHARMACEUTICAL ASSOCIATION and of the progress made in the arrangements for the Rapid City meeting. Dean Wulling addressed the students in an inspiring message of encouragement.

Henry C. Kruckeberg, recently addressed a joint meeting of the Northwestern Branch A. PH. A. and the Wulling Club of the College of Pharmacy, University of Minnesota. He stressed the importance of professional pharmacy and its part in public health.

Howard W. Ambruster, through his Washington attorneys, has formally requested the clerk of the Supreme Court of the District of Columbia to print the record in the case of Ambruster *versus* the Secretary of Treasury. This is reported in the *Press* as the first step in appealing to the Court of Appeals of the District of Columbia the action of the lower Court in dismissing Mr. Ambruster's petition for an injunction against the Cabinet officers restraining them from permitting the importation of alleged substandard crude ergot of rye.

J. M. Lindley, treasurer of Iowa Pharmaceutical Association, celebrated the completion of thirty years of service as secretary of the Winfield school board with a dinner to those who had been members of the board during the three decenniums, representatives of the various departments of the Winfield school system, and a few other friends. Two more years and Mr. Lindley can celebrate the 30th anniversary of membership in the A. PH. A.

Election of Dr. Irving Langmuir, scientist, as president of the American Chemical Society for 1929, has been announced. He succeeds Prof. Samuel W. Parr of the University of Illinois, who was named president-elect for 1929 and automatically becomes president again in 1930.

Dr. D. B. Brown, proprietor of West Park Pharmacy, Dallas, has been appointed Dean of Baylor University College of Pharmacy. The dean succeeds Dr. Chester A. Duncan who has long been connected with the school and who recently resigned.

Miss Margaret Cousins, the talented daughter of Editor and Mrs. Walter H. Cousins, delivered an address before the convention of the Texas High School Press Association at Baylor-Belton College on Dec. 15th, on the subject, "The Trade Journal as a Possible Profession." Miss Cousins is associate editor of the *Southern Pharmaceutical Journal,* a graduate of the University of Texas, and a member of Theta Sigma Phi journalistic sorority and the Dallas Penwomen.

D. Claude S. Hudson, professor of chemistry and chief of the chemistry division of the Hygienic Laboratory, United States Public Health Service, will receive the Willard Gibbs Gold Medal for 1929. Dr. Hudson's recent work at the Bureau of Standards on the structure of the sugars has attracted wide attention among organic chemists. His researches have resulted in improved methods for preparing many sugars, which have been particularly useful in bacteriology. Presentation of the medal will be made in Chicago next May.

John E. Goldner, member A. PH. A., has recently returned from a visit to Sweden.

Mr. Goldner served an apprenticeship with Knut Magnus Sjoberg, proprietor of Swan Drug Store, Stockholm. The latter is well and favorably known in his own and other European countries, and is active in pharmacy of Sweden, having held the presidency of Swedish pharmaceutical organizations, and is a member of the Board of Regents of the College of Pharmacy of Stockholm.

W. G. Crockett professor of pharmacy at the Medical College of Virginia, is now editing the *Bulletin* of the Virginia Section of the American Chemical Society. Professor Crockett was elected editor early in June, and the first issue this fall came out in October. The *Bulletin* carries much valuable material which appears in it from month to month. The Editor is also publicity director of the Virginia Academy of Science for the year 1928–1929, and vice-chairman of the Scientific Section of the AMERICAN PHARMACEUTICAL ASSOCIATION.

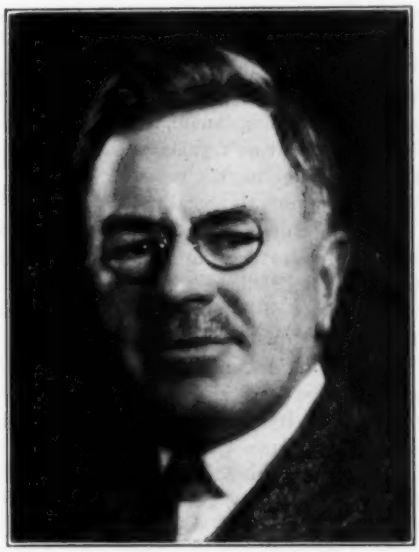
Roland T. Lakey, who has been acting dean of the School of Pharmacy of the College of the City of Detroit, is now the dean.

Dr. H. B. Haag, is now working with Dr. Robt. A. Hatcher at Cornell Medical School. Dr. Haag is a graduate, registered pharmacist, and is completing his fellowship period at Cornell.

Harry B. Mason, assistant-to-president of Parke, Davis & Company, retired as an officer of the company on January 1st in order to devote himself to personal interests which have come to demand a good deal of his time. Mr. Mason has been with Parke, Davis & Company for more than 25 years. For a decade he was editor of the *Bulletin of Pharmacy* and in this capacity was a pioneer in arousing druggists to better merchandising methods, especially in the matter of profit accounting.

In 1918, he was made director of advertising for Parke, Davis & Company, and then, in 1920, appointed an officer of the company with the title of assistant secretary. Later on he was made secretary, and now for a number of years has been assistant-to-president and a member of the executive committee.

Mr. Mason is the author of "The Druggist and His Profits" and other business books for druggists. At an A. PH. A. meeting more than a quarter of a century ago he read a paper forecasting chain-store developments which have since taken place in the drug business and other lines. From 1903–1905, he was chairman of the Section on Education and Legislation, and, in 1913, of the Section on Commercial Interests, A. PH. A.



HARRY B. MASON.

Mr. Mason's immediate plans for the future include a vacation trip of three months through the East and South.

A dinner will be tendered **Dr. William C. Anderson** by his friends on February 6th. Dean Anderson has served with distinction for many years on the New York State Board of Pharmacy and recently retired from the Board. In view of his splendid record thereon, his friends desire to give recognition to his services, and plans are being perfected to make the dinner the event of the season. Among those expected to attend are Dr. James Sullivan, assistant commissioner for higher and professional education, Albany, N. Y., the members of the State Board and presidents of the various local organizations throughout the state.

Chairman S. L. Hilton, A. PH. A. Council, has called attention to an article appearing in the *Canadian Pharmaceutical Journal*, copy of which follows:

"Cholera, typhoid and leprosy germs are purchasable by *any* person who wants them, in more than a dozen Paris drug stores, police learned when investigating the source of supply of Armand Schirmer, whose so-called laboratory, when raided, was found to contain a dozen test-tubes filled with the deadliest bacilli.

"The police, who arrested Schirmer on a swindling charge, found that the Paris pharmacists, while not permitted to sell paregoric without a prescription, were permitted to sell as many million germs as desired.

"Investigation then revealed that many students of medical schools are engaged in the practice of breeding bacilli, in order to study development, but no regulation exists preventing them from giving the tubes, or disposing of the deadly germs, to illegal users."

Chairman Hilton has called the attention of Medical Men to the dangers of unrestricted sales of such products. The article stresses the importance of having such products under supervision of qualified pharmacists.

The title of doctor of natural history has been conferred on Boris III, King of Bulgaria, by the University of Sofia, in recognition of his work on the fauna and flora of the country. The king's palace is said to house one of the finest museums in the Balkan states.

The annual meeting of the Mallinckrodt Chemical Works' representatives, branch managers and others, took place in St. Louis during the week ending December 15th, followed by a banquet at the Missouri Athletic Association. **L. G. Blakeslee** acted as toastmaster and at the close of the meeting made formal announcement of his retirement from the Company, to take place January 1st. Mr. Blakeslee has been connected with the firm for over thirty years, having charge of their exploiting and advertising department. Previous to his engagement with this firm, he was with McKesson & Robbins of New York for many years and is known to have a wide and extended knowledge of pharmaceutical and medicinal subjects. Many expressions of regret were heard from his friends with whom he has so long been associated, and Mr. Edward Mallinckrodt, on behalf of the firm, presented him with a handsome "Master" Hamilton watch in appreciation of his services.

President Coolidge has received the resignation of Abram F. Myers as a member of the Federal Trade Commission. The President is hopeful that Mr. Myers will remain on the Commission until certain investigations now under way by the Commission, including the public utility inquiry, have been completed. Mr. Myers, who is a native of Iowa, was given a recess appointment as a member of the Commission last August. In connection with Commissioner Myers' resignation, Colonel Charles H. Marsch, of Litchfield, Minn., is mentioned as a member of the Federal Trade Commission.

John D. Gillis, former president of John T. Milliken & Co., St. Louis, now owned by the Abbott Laboratories, Inc., Chicago, has joined the executive staff of the Monsanto Chemical Works, St. Louis. He is assistant to President Edgar M. Queeny.

Neve Drug Stores, Inc., which operates sixty-seven retail stores in New York city, has been absorbed by the Whelan interests. The stores will be operated under the Neve name by the United Retail Chemists Company, as a unit of the United Cigar Stores Company of America in association with United Cigar Stores, Inc., and the Whelan Drug Company. A. A. Neve will be president of the unit.

Herbert W. Parker, former president of Arkansas Pharmaceutical Association, of Jonesboro, Arkansas, recently entertained the Craighead County Medical Society with a banquet at Hotel Noble. Many dentists also were in attendance. Among the speakers were representatives of these professions, the Mayor and Booker Latimer, of DeWitt, president of the Arkansas State Board of Pharmacy.

At a recent meeting at DeWitt the druggists of Arkansas County, Arkansas, met and organized a county druggists association headed by Booker Latimer, of DeWitt. Other officers of the county organization are Sam Lowe of Gillett and Howard Morphew of Stuttgart. The organization will hold meetings each month for an exchange of ideas and information of benefit to the members of the Association. It is said that every drug store in Arkansas county will go on a cash basis on the first day of January 1929.

Mr. and Mrs. James David Machovich, of Los Angeles, Calif., announce the marriage of their daughter, Dorothy Alyce, to Mr. Edwin Sigvale Sater, December 26, 1928.

Mr. Sater's connection with the A. PH. A. Headquarters project will be favorably recalled by those he came in contact with. He is now associated with the Western Company, of Chicago. Congratulations and all good wishes are extended to Mr. and Mrs. Sater.

President John A. Hartwell, of the New York Academy of Medicine, has made the statement relative to the "splitting of medical fees" that it "has grown to such alarming proportions" as to threaten the profession with "disaster if not disgrace." The publicity given to the statement indicates the sincere effort of the profession to correct the abuse.

Robert Andrews Millikan has been elected President of the American Association for the Advancement of Science. His work is pre-eminent in physics. He is a Nobel prize winner. B. E. Livingston was reëlected permanent secretary.

Carl J. Sebastian Herzog, for 17 years connected with the Metz Laboratories, is now the president of Duke Laboratories, Inc. The latter are to be distributors in the United States of P. Beiersdorf & Co. (Hamburg), and also of the products of the Collapsule Company.

Dr. William H. Welch, as retiring president of the League of Nations Society, will be given a banquet, January 17th, at Hotel Belvedere, Baltimore. Among the speakers of the occasion will be Dr. Henry Van Dyke and former Attorney-General, George W. Wickersham.

Dr. John J. Abel and Dr. H. Jensen have announced the discovery of the sugar hormone. Dr. Abel is reported in the Press as saying: "We believe this to be the first instance of the isolation of a powerful specific hormone in the form of a crystalline protein of a relatively simple composition."

Dr. Oliver Kamm, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, head of chemical research for Parke, Davis & Co., received a $1000 prize from the American Association for the Advancement of Science, at its recent meeting, for his work in an investigation of the ductless glands, and his isolation of hormones.

Dr. Roger Adams, during the meeting of the American Association for the Advancement of Science, predicted that the day would soon come when there is a synthetic organic chemical available for every human ailment.

An address on "The Problem of Arsenical Spray Residue," by Howard W. Ambruster, has been reprinted from the *Journal of the Franklin Institute.*

Capt. Charles E. Riggs has been nominated by President Coolidge to be surgeon-general and chief of the Bureau of Medicine and Surgery of the Navy Department. He succeeds Rear Admiral Edward E. Stitt, who has served two terms. The latter is a graduate in pharmacy and also in medicine.

The University of Tennessee recently dedicated the C. P. J. Mooney Memorial Library and the Pharmacology Building—College of Medicine, of Dentistry, School of Pharmacy, and of Nursing—at Memphis. Our fellow-members **Dr. A. Richard Bliss** and **Prof. A. John Schwartz,** are members of the Pharmacy faculty; the former is dean, and also member of the faculty of the College of Medicine.

The Duval Texas Sulphur Company, which began production, using the Frasch process,[1] on Palangana Dome, Duval county, Texas, November 1st, is taking out 200 tons of 99.7 to 99.8 per cent sulphur a day. It expects to double its output by the end of the year.

The Druggists Circular has opened up an interesting subject by an editorial on "Druggists as Heroes." In every period and every state there are outstanding characters who are entitled to distinction.

The JOURNAL is making an effort at this time to have as many sketches of pharmacists, as may be deemed worthy of recognition in the "Dictionary of American Biography," now being published.

"The History of Medicine" during the war period has been completed. These reports may be purchased from the Superintendent of Documents, Washington, D. C. and those associated with medicine should see to it that libraries to which they have access procure a set for reference.

The South Dakota Optimist, along with useful information, as its name suggests, dispenses words of cheer and encouragement.

Mortar and Pestle of Albany College of Pharmacy is the Students' publication. A column of "pharmaceutical musings" will be added in which comments will be made on articles appearing in the pharmaceutical press. Gordon C. Stone is to have charge of the department.

Chemical Investigations of the Fruit of Crataegus oxyacantha L.—An inaugural dissertation presented in partial fulfilment of the requirements for the Doctor's degree by Louis Baechler, apothecary in Kreuzlingen, Thurgau. The work was performed in the Pharmaceutical Institute of the University, Basel. The comprehensive report contains 114 pages. In the introductory it is stated that there is a return to materia medica of plant and animal origin. The historical chapter is full of valuable information and the literature cited includes twenty references. The botanical and pharmacognostical chapter contains ten pages and twenty-eight references and the greater part, as indicated by the title, is devoted to the chemical investigation.

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[1] The late Hermann Frasch, was for a time assistant to Prof. John M. Maisch, deceased.

The Mask, of Kappa Psi Pharmaceutical Fraternity, November 1928, is the convention number and is most interesting. It shows what the officers can do with the aid of an active membership; the meeting was full of the spirit of fraternity, and its story is told in this issue by word and picture.

The publisher of "Reminiscences—Bodemann" states that "these reminiscences of Wilhelm Bodemann appeared originally in serial form in *Drug Bulletin*. They were written in fulfilment of a promise made to his daughter, now dead, that he would write a sketch of his life's work for her two boys.—To these two splendid grandsons, therefore, and to the memory of his dear daughter Wilhelm affectionately dedicates this little book."

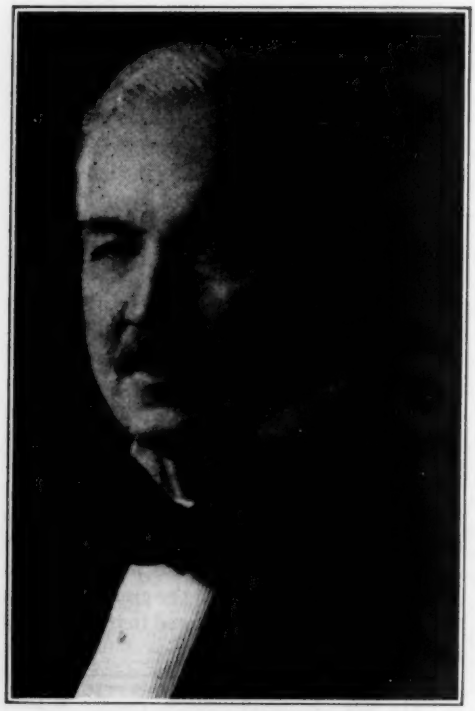
Dr. J. H. Beal has written a character sketch of the Reminiscent. The reminiscences are interestingly told and it is hoped to make further use of the records in a later issue.

The *Bulletins* and *Information Letters* being issued by Secretary J. Lester Hayman, of West Virginia Pharmaceutical Association; John Culley, secretary of Utah Pharmaceutical Association; and Roy C. Reese, of Kansas Pharmaceutical Association, evidence study and acquaintance with national and state legislation and activities. All issues are interesting and informative, giving the members of the respective associations full value for their annual dues. The efficient secretaries deserve coöperation and support and this general comment is intended to express appreciation of the good work being done by these state officials and to wish them, and others so engaged, success for their efforts in the year begun.

OBITUARY.

THOMAS NEVIN JAMIESON.

Thomas N. Jamieson added many a cheer to gatherings of pharmacists, as he is recognized as the founder of the Veteran Druggists' associations. He, however, credits Albert E. Ebert as the inspirer and to that extent the promoter of the C. V. D. A., for it was on June 21, 1866, he obtained employment with E. H. Sargent & Co., through the kindly interest of Professor Ebert. This is a tribute of gratitude; however the great value of the organizations is in the permeating spirit of fraternity.



THOMAS NEVIN JAMIESON.

T. N. Jamieson was born in Canada, February 29, 1848; his parents died when he was still a youth, and these years were spent on a farm. After the father's death Thomas was apprenticed to Hugh Davidson, a pharmacist of Walkerton, Ontario.

In 1866, armed with a commendatory letter of introduction, young Jamieson came to Chicago, where, as indicated above, he became a clerk in the pharmacy of E. H. Sargent & Co. This firm opened a branch store and Mr. Jamieson was placed in charge, under an agreement of partnership in case the business proved successful. Although the business was a success, Jamieson was not taken into the partnership, owing to the dissent of a financial member of the firm. He decided to leave as soon as arrangements could be made, and accepted employment with Buck & Rayner.

The young man was successful in his ventures until after the Chicago fire, during the panic of 1873. Gradually, however, fortune again favored him; he became a successful business man and political leader, and in addition a mine venture in Canada added largely to his

comforts. Relative to the latter he wrote in "Letters by Dr. Thomas Nevin Jamieson," edited by his daughter, Helen Jamieson Becker, that this had enabled him to provide adequately for his children and grandchildren, and to retire from political and other strenuous activities and bring his splendid helpmeet out here to beautiful Pasadena to spend their declining years in comfort and peace.

In writing to Wilhelm Bodemann October 27, 1921, Frater Jamieson insisted that the former's name be coupled with his in the institution and perpetuation of that most unique and glorious organization known and revered throughout this country by its motto, "Cheers for the living! Tears for the dead!" On the 14th anniversary of the C. V. D. A. Frater Jamieson delivered the address, at which time he recounted some of the events of his life, the inception of the organization and the adoption of the Carnation as the Veterans' flower. On December 17th, the day of the Veteran's death, the son brought a bunch of carnations to the bedside; his father acknowledged them with a smile and requested that he give the members his farewell message.

The Press, in writing of the deceased, made several errors and omissions. The origin of Jamieson Day and organization of C. V. D. A. was given as June 21, 1866, and in another paper he was designated "father of the chain store," a system of business which he certainly did not favor.

Thomas N. Jamieson stood high in the esteem of political friends and opponents. It is said he declined the tender of an appointment in the Cabinet of President Roosevelt. At the inaugural banquet of the Governor of Illinois, Dr. Nicholas Senn requested Governor Tanner to appoint T. N. Jamieson (then President of the Illinois Board of Pharmacy) a Doctor of Pharmacy, in recognition of his valuable services to the medical profession in pharmaceutics. The request was granted. He was appointed Naval Officer of Customs at the port of Chicago in 1904 by President Roosevelt. Earlier, he was Clerk of the Appellate Court.

Mrs. Jamieson—who with two daughters and a son, Stillman, survive—is deeply interested in the Veterans' Associations. The latter have passed appropriate resolutions; the members of the C. V. D. A. not only mourn the loss of one of their number, but the organizer of the parent body. The AMERICAN PHARMACEUTICAL ASSOCIATION joins in expressions of sympathy.

ALFRED DELANG.

Alfred DeLang, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, died at his home in Cincinnati, December 31st, aged 83 years. He was a founder and life member of the N. A. R. D., and former president of Ohio Pharmaceutical Association; one of the founders of the Academy of Medicine and honorary member Ohio Valley Druggists' Association.

After sixty years of success in the drug business, he retired about two years ago—at which time a testimonial dinner was tendered to him as an expression of esteem of pharmacists and citizens generally of Cincinnati. He was a veteran of the Civil War, among druggists and of the Masonic bodies, highly regarded by all.

Prof. John M. Coulter, former president of the University of Indiana, died at his home, Glenwood Lodge, Yonkers, N. Y., December 23rd. Since 1925, Professor Coulter has been engaged in botanical work for the Boyce-Thompson Institute for Plant Research in Yonkers. His widow, two daughters and a son, Merle Coulter, professor of botany at the University of Chicago, survive.

Dr. John K. Haywood, chief of the office of insecticide, fungicide and caustic poison supervision, United States Department of Agriculture, died November 30th, at Washington, aged 54 years. He was born at Raleigh, N. C., and received his education at Cornell University and George Washington University.

He entered the Department of Agriculture in 1897 as a chemist in the division of chemistry under Dr. Harvey W. Wiley and was placed in charge of the laboratory studying waters, stock feeds and insecticides. When the insecticide act was passed in 1910, Dr. Haywood was first made a member and then chairman of the Insecticide and Fungicide Board which administered the act. This board was abolished in 1927 when the Food, Drug and Insecticide Administration was separated from the Bureau of Chemistry, and Dr. Haywood was placed in charge of insecticide, fungicide and caustic poison administration work.

Dr. Joseph Goldberger—stricken several months ago by illness, while engaged in the study of diets thought to be the cause of pellagra—died Jan. 17th. He was a scientist of the U. S. Public Health Service. During other investigations he contracted typhus, yellow fever and dengue.

SOCIETIES AND COLLEGES.

AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION.

The winter meeting of the American Pharmaceutical Manufacturers' Association was held in Indianapolis, December 7th and 8th. There was an attendance of seventy-eight, representatives of thirty-five of the forty-nine active members of the organization. The first day was devoted largely to a discussion of distribution, classification and costs, directed by Chairman F. A. Mallett. Labeling of pharmaceutical products with respect to therapeutic activities engaged the members on the second day; Dr. James J. Durrett was present and answered questions and gave information on the subject under discussion.

President R. Lincoln McNeil presided. It was voted to hold the next annual meeting at Old Point Comfort during the first week of June.

NATIONAL DRUG TRADE CONFERENCE—ANNUAL MEETING.

The National Drug Trade Conference held its annual meeting at Washington Hotel, December 12th. The Conference gave hearty endorsement to the Pharmacy Corps bill for the U. S. Army and asked its constituent members to further the movement in every possible way as a means for advancing the status of pharmacy and as a matter of protection to soldiers and others dependent on army medical treatment, and that the giving of commissions to pharmacists would attract more capable men to the army and would assist in strengthening the morale of pharmacists generally. Dr. A. G. DuMez reviewed the history of prior efforts.

GENERAL STATUS OF PHARMACY.

Chairman W. F. Rudd, of the Special Committee on the General Status of Pharmacy made a report accompanied by the request that each of the four members present suggestions. The Chairman pointed out the opportunities of this Committee to render assistance to all divisions of pharmacy and the drug trade.

J. H. Beal thought too much importance was given to legislation as a cure-all for the ills of druggists and not enough to better qualifications of pharmacists. E. F. Cook urged that the attention of pharmacists should be directed to opportunities outside of the regular channels and that students in colleges of pharmacy be made acquainted with work of this kind. P. I. Heuisler supported several of the suggestions and, especially, that students be trained for the related industries. The chairman was of the opinion that the public should be made acquainted with the importance of highly trained men in pharmaceutical manufacturing.

Action was taken on two resolutions regarding poison laws, one declaring that in future legislation of this character, the poisons included should be specifically mentioned by name to avoid confusion and misinterpretation, and the other authorizing the appointment of a special committee of five members to consider the advisability of preparing a standard table or list of potent and toxic drugs to serve as a basis for labeling and packaging laws and regulations. A resolution, passed last year, was again presented in which the need of amendment of the Federal Caustic Poison Act was stressed. It was declared that the system of the "practice of multiple seizures" of merchandise suspected of being in violation of the Federal Food and Drugs Act was contrary to the principles of the Act.

The Capper-Kelly bill was unanimously endorsed. W. C. Parry, of the Federal Trade Commission, asked for support in the investigation of Chain Store methods.

Councillor S. L. Hilton, U. S. Chamber of Commerce, reported actions of that body; the Conference approved an amendment opposing further regulation of business by the Government. Commissioner James M. Doran addressed the conference briefly, saying that the permissive system now gives the bureau practically no trouble. He thanked the representatives and their organizations for their coöperation with the enforcement officials and asked for a continuance of this coöperation. President Henry pointed out to Commissioner Doran that this is the first time for many years that prohibition has not been a topic for discussion by the Conference.

R. P. Fischelis stated that no provision had been made for pharmacy representation in the study of "Cost of Medical Care" by the National Committee. He presented an invitation from Dr. W. J. Schieffelin that a committee of pharmacists be appointed to coöperate in the study of the "Cost of Medical Care." A committee, consisting of one member from each member organization was provided for.

The following were in attendance:

AMERICAN PHARMACEUTICAL ASSOCIATION—J. H. Beal, S. L. Hilton and E. F. Kelly; National Association of Retail Druggists—S. C. Henry, Ambrose Hunsberger and J. F. Finneran; National Wholesale Druggists' Association—C. Mahlon Kline and W. L. Crounse; American Drug Manufacturers' Association—C. P. Frailey, W. H. Bigelow and A. Homer Smith; American Pharmaceutical Manufacturers' Association—Harry Noonan, H. B. Johnson and C. D. Smith; The Proprietary Association—F. A. Blair, H. B. Thompson and Philip Heuisler; National Association Boards of Pharmacy—A. C. Taylor, R. L. Swain and H. C. Christensen; American Association of Colleges of Pharmacy—W. F. Rudd, Ernest Little and A. G. DuMez; Federal Wholesale Druggists Association—W. H. Bradbury and R. E. L. Williamson.

Privilege of the floor was extended to Messrs. A. L. I. Winne, E. C. Brokmeyer, R. P. Fischelis, D. F. Jones, E. F. Cook, J. G. Beard, L. L. Walton, H. M. Lerou, M. N. Ford, E. G. Eberle and C. B. Jordan.

The Officers for the ensuing year are: *President*, S. C. Henry; *Vice-President*, H. C. Christensen; *Secretary-Treasurer*, E. F. Kelly; *Councilor to the Chamber of Commerce of the U. S. A.*, S. L. Hilton. *Members of the Executive Committee:* S. C. Henry, National Association of Retail Druggists; H. C. Christensen, National Association Boards of Pharmacy and E. F. Kelly, AMERICAN PHARMACEUTICAL ASSOCIATION; W. J. Schieffelin, Jr., National Wholesale Druggists' Association; Harry Noonan, American Pharmaceutical Manufacturers' Association; C. P. Frailey, American Drug Manufacturers' Association; A. G. DuMez, American Association of Colleges of Pharmacy, R. E. L. Williamson, Federal Wholesale Druggists Association and H. B. Thompson, The Proprietary Association.

SURVEY OF PHARMACEUTICAL EDUCATION.

An advisory committee has been provided for the survey of pharmaceutical education, following the actions taken at the Portland meeting. The personnel of the committee is as follows: From the National Association of Boards of Pharmacy, Messrs. L. L. Walton, of Pennsylvania (chairman of the committee), H. C. Christensen, of Chicago and A. C. Taylor, of Washington. From the American Association of Colleges of Pharmacy, Deans, E. H. Kraus, of the University of Michigan, C. B. Jordan, of Purdue University and C. H. LaWall, of the Philadelphia College of Pharmacy. From the AMERICAN PHARMACEUTICAL ASSOCIATION, Messrs. W. W. Horne, of North Carolina, E. F. Kelly, of Maryland and H. A. B. Dunning, of Maryland. From the Pharmaceutical Syllabus, Chairman J. G. Beard (Secretary of the committee). President D. F. Jones, A. PH. A., attended the conference. A meeting of the committee is scheduled to be held at the end of January or beginning of February.

AN ANNOUNCEMENT OF THE PHARMACY COUNCIL OF THE BOARD OF REGENTS OF THE STATE OF NEW YORK.

At a meeting of the Pharmacy Council of the Board of Regents of the State of New York held on November 19, 1928, at the New York College of Pharmacy, Department of Pharmacy of Columbia University, all members of the Council, comprising the Deans of the five schools of Pharmacy of the State, being present and also Commissioner James Sullivan of the State Education Department, the following resolutions were unanimously adopted:

1. WHEREAS, certain proposals have been made to increase the course in the schools of pharmacy of this state from a three-year to a four-year basis, and

WHEREAS, it has been the policy of the State Department of Education to give ample announcements before increasing the requirements in any of its professional schools, and

WHEREAS, the pharmacy schools of New York State have but recently put into operation a three-year course of instruction, be it

Resolved, That the consideration by this Council of a recommendation for the adoption of a four-year course in pharmacy should be based primarily on the interests of the pharmaceutical education and the needs of the profession of pharmacy in New York State, and be it further

Resolved, That this Council deems it inadvisable to adopt a four-year course in pharmacy until the three-year course shall have been given a trial, and

WHEREAS, it has been proposed to prepare a Syllabus of pharmacy instruction without reference to the amount of time available for such instruction in our professional schools, be it

Resolved, That in the opinion of this Council it is not practicable to formulate a Syllabus of instruction unless such Syllabus is based on some definite time limitation for each subject of the course.

(Signed)

HENRY H. RUSBY WILLIAM C. ANDERSON
WILLIS G. GREGORY WILLIAM MANSFIELD
JACOB DINER

MINNEAPOLIS GETS THE NEXT N. A. R. D. CONVENTION.

The Executive Committee of the National Association of Retail Druggists meeting in Chicago the week of November 18th, selected Minneapolis as the convention city for 1929 and set the dates for September 16–20, 1929. Other contestants for the honor were Atlantic City, Buffalo, Detroit and Syracuse.

OFFICERS OF THE UNITED MEDICINE MANUFACTURERS OF AMERICA.

At the annual meeting of the United Medicine Manufacturers of America, H. E. Woodward, of Binghamton, N. Y., was reëlected *President*, with the following officers: *Vice-Presidents*, eastern, A. H. Gerndt, New York; central, C. F. Keller, Mechanicsburg, Ohio; southern, W. W. Burgess, Kansas City; western, Frederick Beutel, Los Angeles; *Treasurer*, George W. Reese, Cleveland, Ohio; *Secretary* James F. Pickett, Scranton, Pa.

OFFICERS OF INSECTICIDE AND DISINFECTANT MAKERS.

The fifteenth annual meeting of the Insecticide and Disinfectant Makers was held at the Hotel McAlpin, New York, Dec. 10th–12th. The officers for the ensuing year are: *President*, H. W. Hamilton, Kearny, N. J.; *First Vice-President*, Robert C. White, Philadelphia; *Second Vice-President*, John Powell, New York City; *Secretary*, Harry W. Cole, Holbrook, Mass.; *Treasurer*, Robert J. Jordan, Brooklyn.

FILLING THE CENTURY BOX OF THE AMERICAN BUILDING.

The Century Box locked into the walls of the American Building was filled in front of the main entrance on November 17th, just before the Dedicatory Exercises, which took place on the fifteenth floor of the building where the Home Offices of the American Druggists' Fire

Filling the Century Box of the American Building.

Insurance Company will be located. President Charles H. Avery, assisted by Misses Carola and Ella Gretchen Freericks, officiated. Immediately surrounding are Vice-President L. G. Heinritz; Judge Stanley Matthews, Vice-Mayor Charles W. Dupuis; Judge Coleman Avery; Dr. Wm. C. Anderson, of Brooklyn; Professor John Uri Lloyd. Others of the interesting group are: President Frederick Hertenstein, of the Western Bank & Trust Company; Treasurer Walter Rothwell; George O. Young and Dr. J. H. Beal, of the Executive Board of the Company; Vice-President J. G. Gutting, of the Second National Bank; Directors E. H. Thiesing, John D. Muir, E. B. Heimstreet, M. S. Kahn and Edward Voss, Jr., of the Company; Architects Joseph G. and Bernard Steinkamp; General Contractors, Irwin and Theodor Penker; Assistant Secretary W. P. Starkey, of the Company; Chas. Ehlers, Treasurer of National Association of Retail Druggists; Edward A. Lehr, President of the Ohio Valley Druggists' Association; Frank H. Fredericks, Secretary and General Manager of the Company, and at the extreme right the veteran pharmacist of Cincinnati, Alfred DeLang.

OFFICERS OF THE GERMAN APOTHECARIES' SOCIETY—NEW YORK.

The following officers were elected by the German Apothecaries' Society, December 6, 1928: *Honorary President,* Carl F. Schleussner; *President,* Curt P. Wimmer; *1st Vice-President,* C. F. Schoenherr; *2nd Vice-President,* W. Nemser; *Recording Secretary,* Otto P. M-Canis; *Corresponding Secretary,* Carl Benkendorfer; *Treasurer,* Paul Wellenberger; *Librarian,* George Decker; *Executive Committee,* Messrs. Carl F. Schleussner, Robert S. Lehman, Fred Schaefer; *Chemist,* Dr. Friedrich Klein; *Attorney,* Hieronimus A. Herold. Robert S. Lehman, retiring president of the Society, presented his annual address and was given a rising vote of thanks.

President Wimmer appointed the following officers: *Chairman of the Scientific Committee,* Dr. Friedrich Klein; *Chairman of the Entertainment Committee,* Bruno Dauscha; *Chairman of the Legislative Committee,* Robert S. Lehman; *Chairman of the Legal Aid Committee,* Herman Blomeier. Messrs. Canis, Nemser, Wipperman, Bruns and Rehse were elected delegates to the A. PH. A. Convention.

The President also made extended remarks relative to the European tour being arranged by Editor Kantrowitz.

SOCIETY OF AMERICAN BACTERIOLOGISTS.

The Society of American Bacteriologists met in Richmond during the last week of December. Dr. W. H. Wright, of Madison, Wis., was elected Chairman of the division of agricultural and industrial bacteriology, and Dr. Ivan C. Hall, of Denver, Colo., of that of immunology and comparative pathology.

DISPLAY NAME OF PHARMACIST.

The New Jersey Board of Pharmacy is advising the public through the daily press to make sure that the place where prescriptions are taken to be compounded and where drugs and medicines are purchased is a properly conducted pharmacy *in charge* of a registered pharmacist. It is a requirement of the law that the name of the registered pharmacist *in charge* of a pharmacy must appear on a sign which can be read from the outside. The public is being educated to look for such signs. If you do not display them you are losing public confidence as well as violating the law.

FEDERAL TRADE COMMISSION ACTIVITIES.

Late developments in Federal Trade Commission cases both in the commission and in the courts as well as the status of trade practice conferences and economic investigations, are reviewed in the commission's monthly statement of work issued to-day.

Drafts of questionnaires to be used in the inquiry into chain store systems are practically completed. A number of officials of chain store organizations have been interviewed with respect to their methods of operation.

Practically all data obtained from several forms of questionnaires used in the inquiry into resale price maintenance have been tabulated and the results partly analyzed and worked into the body of the report. Several chapters of the first draft of the report have been written.

L. A. Watt, heretofore in charge of the analytical laboratory of Monsanto Chemical Works, has been placed at the head of a department which will handle problems of the trade, in which technical or scientific questions are involved.

COSMETIC PREPARATIONS IN CANADA.

The big drug stores purchase through large distributing houses in central Canadian cities, through their chain connections, or direct from manufacturers. They aim to handle only such well-known American and Canadian toiletries as are widely advertised in American and Canadian magazines, it being their desire to avoid the expense of local advertising, the cheaper articles being left to sell themselves through the numerous stores supplying the population in general. (Consul O. Gaylord Marsh, Sydney, Nova Scotia.)

CHINESE PROPRIETARY MEDICINE REGULATIONS.

According to a cablegram from Trade Commissioner Frank S. Williams, Shanghai, new regulatory measures have been promulgated under the Ministry of Public Health. These measures are designed principally to prevent the fraudulent importation of narcotics and are somewhat nominal in effect, representing few changes in practices previously established.

Customs officers now act partly on their own initiative and in coöperation with the Ministry of Public Health in requiring the analysis of medicinals suspected to contain an excessive amount of narcotics. It is not believed that reputable American preparations need anticipate any great difficulty.

HONDURAS A MARKET FOR PROPRIETARY MEDICINES.

There is quite a market in Honduras for proprietary medicines, but it is not generally entered with success until a certain amount of advertising and educational work is done. Posters, pamphlets and samples are the most common forms of advertising. Drug stores as agents are the best means of distribution in Honduras.

In entering this market one should not lose sight of the fact that advertising material, correspondence, price lists and catalogs should be in the Spanish language to obtain best results. This is particularly true of the labels and directions on the bottle containing medicines.

A list of drug stores in Honduras is available to accredited firms upon application to the Chemical Division. (Consul George P. Shaw, Tegucigalpa.)

A LECTURE ON ELECTRIC LIGHT, 50 YEARS AGO.

The *Chemist and Druggist*, of recent date reproduces the following from its columns of fifty years ago:

"An announcement had been made that a lecture would be delivered by Mr. James N. Shoolbred, B.A., Me. Inst., C.E., on the Practical Application of Electricity to Lighting Purposes, and it was further understood that there would be a competition between the rival inventors. Long before the usual hour of eight o'clock, a dense and, indeed, an angry crowd besieged the Hall of the Society of Arts. Outside, an electric lamp threw a vivid light on the opposite buildings, giving an appearance of white marble to the spot where the rays fell, and leaving the rest in absolute darkness. A curious effect was thus produced, not unlike a magnified spectrum. Inside the entrance hall another lamp, naked, was enough to blind the visitors, and made a buzzing noise which was distressing. When we with difficulty got in, a member was declaiming his grievances to a struggling audience, and adverted in no measured terms to the fact that he had paid two guineas for his membership; some of the crowd took a practical view of the matter and successfully evaded both the signature-book and the small boy who was stationed to collect the tickets, and shared the mental banquet upstairs as uninvited guests."

Dictionary of American Biography. Vol. I. —ABBE-BARRYMORE. Edited by Allen Johnson, 660 pp. Published under the auspices of the American Council of Learned Societies. New York; Charles Scribner's Sons. (To be sold at $250 for the set of twenty volumes.)

Pharmacists should be represented in this comprehensive biographical dictionary. Dr. Allen Johnson may be addressed 602 Hill Bldg., 17th St., Washington, D. C.

Every state has had its pharmacists who are entitled to a place in this Dictionary (the Dictionary does not include sketches of those living). In order to be accepted the individual must have had more than local prominence. State associations should take up this matter and advise Dr. Johnson why the one recommended for recognition should be included; accurate data should accompany the communication. It hardly is necessary to state that the Editor has no easy task in making decisions relative to the inclusions.

LEGAL AND LEGISLATIVE.

POISONS MAILING BILL IS PASSED BY HOUSE.

The House has passed and sent to the Senate the bill (H. R. 10441) permitting the sending of poisons in the mails. This authority was given in 1909 but was inadvertently removed in 1920 when an amendment was added to the postal laws permitting the mailing of poisons and drugs to physicians and pharmacists. The amendment approved permits the Postmaster-General to prescribe packing requirements and to accept for mailing such generally prohibited articles as are not outwardly or of their own force dangerous or injurious to life, health or property.

MINERAL OIL IN FOOD PROHIBITED.

The Department of Agriculture has announced that Mineral Oil is not digested and assimilated; it has neither food nor condimental value; therefore, has no proper place in food products.

"Its use in foods, either as a substitute for edible oil in such products as mayonnaise, salad dressings or household flavors, or for other purposes lowers the food value of the finished product.

"This is expressly prohibited by the provision of the Federal Food and Drugs Act which define a food as adulterated if any substance has been mixed and packed with the article so as to reduce or lower or injuriously affect its quality or strength, or if any substance has been substituted wholly or in part for the article.

"Products containing mineral oil intended for the cure, mitigation or prevention of disease are drugs within the definition of that term set up by the act, and should be plainly and conspicuously labeled as such. No unwarranted therapeutic claims should appear upon the labels or be made otherwise in connection with the sale of such products."

GERMANY CONSIDERING RESTRICTION OF NARCOTIC MANUFACTURE.

It has been reported that the number of narcotic addicts in Germany is on the increase. It would seem that an accredited reason is manufacture beyond home medicinal needs. A Reichstag Committee passed by a large majority the following resolution:

"The Reich Government is requested to take the necessary measures to restrict the production of narcotic drugs in Germany to the amount required for the combating of disease in Germany.

"The domestic requirements of Germany in opiates, reckoned on an alkaloid basis, are, according to the Reich's Health Office, 2400 kilograms a year; Germany's annual exports amount to 9520 kilograms. With regard to the movement in favor of restricting German production to domestic requirements, the Office pointed out that only very few countries produced alkaloids and that throughout the world there was a very considerable legitimate demand for medicinal purposes. The only producing countries were Great Britain, Switzerland, France and Japan."

FEDERAL TRADE COMMISSION RULES ON "CASTILE SOAP" DEFINITION.

On January 2nd, last, the Federal Trade Commission issued an order against James S. Kirk & Company, of Chicago, restraining it from using the word "Castile" and the phrase "Olive Oil Soap" to describe soap, the oil or fatty composition of which is not wholly derived from olives.

Commissioner William E. Humphrey entered a dissenting opinion with the order, in which he said, in part:

"I cannot agree that the facts in this case warrant the issuance of an order. In my judgment there is no evidence to sustain the contention that 'castile soap' in the United States means soap made exclusively of olive oil." He agreed with the trial examiner in the following:

"For 70 years in the United States it has been the ordinary, usual and general custom of all manufacturers of soap to use in the castile soap made and sold by them oils or fats other than olive oil, and there is no evidence whatever that there has been a soap called 'castile' made in the United States for toilet and general household purposes which was made exclusively of olive oil as its fat or oil ingredient. There have been throughout the whole of the period 'castile soaps' made from cocoanut oil exclusively—tallow and cocoanut oil—tallow, cocoanut oil and olive oil—cocoanut oil and olive oil—and various admixtures of these oils or fats." (T. E. Rec. pages 18, 19.)

He said further: "The definitions quoted from the Pharmacopœia and encyclopedias, which define castile soap as indicating a pure olive oil product, refer to it only as a medicine and not as a soap in the general acceptance of the word."

BOOK NOTICES AND REVIEWS

A Treatise on Pharmaceutical Chemistry. By JOHN C. KRANTZ, JR., Ph.D., Baltimore, Maryland. C. V. Mosby Co., St. Louis. $3.50.

Chapter I treats of the simplest of procedures in quantitative analysis, such as discussion of balance, its location, instruction in weighing, etc. Chapters II to XII treat of the quantitative analysis of ions such as can be found in any good book on quantitative analysis. The procedures include both gravimetric and volumetric analysis and the discussion of these. They also include a discussion of precipitation in which solubility product is explained. All of this appears before the discussion of ionization and ionization constant which are reserved for Chapter XX under the head of "Physical Chemistry." The above chapters are very brief, consisting of the following number of pages: 7, 6, 2, 4, 2, 2, 2, $1^1/_2$, 2, 2, $2^1/_2$, and $^1/_3$. It is evident that only the briefest treatment is possible. The "Topics for Study" at the end of each chapter are well chosen and, if properly prepared, would require of the student considerable collateral reading. Chapters XIII and XIV treat of electrolytic determinations. A very good but brief discussion of the fundamental principles involved in electrolytic determination is given and a discussion of electrolytic determinations of the U. S. Pharmacopœia. The author states that mercury cathode may be employed in all the pharmacopœial determinations and he suggests that copper may be determined in this way. I believe the majority of electrolytic chemists prefer not to use the mercury cathode cup for the determination of copper and zinc.

In Part II one page is given to "Organic Chemistry, Introduction" and then the student is plunged into such highly complex subjects as hypnotics, (Chapter XV). The simplest procedure in quantitative analysis is discussed but the student must have studied organic chemistry for at least a year before he would be able to understand complex organic compounds that are treated. The discussion of the classification of these hypnotics according to solubility as per Overton and Meyer is good as is also their description of manufacture and use. The discussion of the therapeutic value of these drugs is questionable in a text of this kind. The references at the end of the chapter are few. Chapter XVI treats of local antiseptics. Here again highly complex compounds are passed with a paragraph or two and the references at the end of the chapter are only to the work of pharmacists and pharmacologists. Chapter XVII treats of antipyretics in a way similar to the treatment of hypnotics and local antiseptics. Only one reference is given. Chapter XVIII treats of bactericides and discusses such unrelated organic chemicals as phenol, chloramine, dyes, organic mercurials and organic compounds of arsenic, silver and antimony. Again we are given only a brief discussion of each with organic chemical formulas. The author does, however, clearly discuss the classification of bactericides and phenol coefficient. A very good list of references is given at the end of this chapter. Chapter XIX is devoted to endocrines. It consists of fourteen pages. A splendid list of references accompany the chapter. The list of endocrines includes: Epinephrine, Tyramine, Ephedrine, Pituitary Gland, Thyroxin, Insulin and the Ovarian Hormone. Evidently the author overlooked the fact that Tyramine and Ephedrine should not be placed in the chapter on endocrines as he plainly states that these substances are a naturally occurring base and a plant alkaloid. The author shows a good knowledge of his subject but only the most important points are touched upon. The chapter is followed by a good reference list.

Part III treats of physical chemistry. The chapter headings are as follows: Ionization, Use of Indicators and Buffer Solution, Equilibria and Colloidal Substances. Only one hundred pages are devoted to the important subject of physical chemistry but good lists of references are given at the ends of the chapters. When we know that whole textbooks are devoted to physical chemistry, to colloids, to emulsions, etc., we fully realize that in one hundred pages only the briefest of treatment is possible.

There are forty-three experiments outlined to illustrate the points discussed throughout the text and these are well chosen.

The book treats of so many phases of modern chemistry that it is not at all surprising that errors could creep in. Several minor errors in the use of English might be mentioned. The structural formulas of Carbromal and Bromural (pages 84 and 85) are in error. "A greater potential decomposition than hydrogen" (page 64) would indicate that hydrogen had a decomposition potential. This same error occurs on page 65. "Is not sufficient for the decomposition of calcium nitrate" (page 67) when calcium is intended. The old form

of the structure of atomic chlorine (pages 123 and 124) is given while modern physical chemists consider this a structure to be made up of three shells with two, eight and seven electrons, respectively. In his references the abbreviations approved by the American Chemical Society are not always used.

In the preface the author states:

"It is the purpose of this treatise to bring to the attention of the student of pharmaceutical chemistry certain special topics in gravimetric and electrometric analysis, organic and physical chemistry, a knowledge of which will enable him more intelligently to attempt to solve the problems of his comprehensive profession. In no manner has the author aimed to serve the end of completeness, for in a field so vast as this one, many volumes would be required to cover it completely, and the experiences of many authors would be necessary."

Perhaps he accomplishes what he set out to do, but the student of pharmaceutical chemistry leaves the book with a feeling that a complete treatment by the author of any one or more of the major subjects touched upon would have been refreshing. The book is a good reference work for those busy workers that need only the fundamentals of the subject, and will undoubtedly find wide use in this connection.

The pharmaceutical chemist is compelled to cover so great a variety of subjects that the reviewer fears that in some colleges of pharmacy considerable "old style" chemistry is still presented. It is difficult indeed for the pharmaceutical chemist to keep abreast of the advancement of so many phases of the science of chemistry and this perhaps explains the above unsatisfactory situation. It is indeed refreshing to find in the author at least one young pharmaceutical chemist who has had sufficient training in modern chemistry to treat understandingly of its application to the problems of pharmacy.—C. B. JORDAN.

Mikrochemie der Arzneimittel und Gifte, Microchemistry of Drugs and Poisons, by ADOLF MAYRHOFER, Ph.D. and Dr. Pharm., Part Two, Drugs of Organic Nature, published by Urban & Schwarzenberg, Berlin. Price 16 marks.

The volume before us is a highly technical and up-to-date treatise on microchemical examination of drugs and poisons of organic nature. It comprises 270 pages of text with 24 illustrations and 15 valuable plates. The work is a good example of German thoroughness in scientific exposition and will be found very valuable by pharmaceutical chemists, pharmacologists and those specializing in pharmacognosy.

The treatise is logically divided into two sections, a general one and a special one. In the general section, the author describes microchemical methods for determination of carbon, nitrogen, sulphur and phosphorus; technical methods for microsublimation and microdistillation; and other routine laboratory methods for microchemical work, such as the determination of the boiling point, etc. A very long chapter is then devoted to mineral optics. Here we find a complete discussion of the applications of the polarimeter and the polarizing microscope in pharmacognostic work. Refractometry receives a great deal of attention and a number of valuable tables are included, giving the refraction indices of various drugs and poisons, both in a solid form and in solution.

Following the general section, which comprises 65 pages comes the special discussion of individual drugs and groups of drugs. The author begins with a discussion on the hydrocarbons of the aliphatic and aromatic series and their halogen derivatives. Then follows discussion and description of the microchemical examination of alcohols, aldehydes, ketones, ethers, etc. Separate chapters are devoted to carbohydrates, glucosides, phenols, organic acids and their esters. A very extensive discussion of the amines comes next. An extremely valuable portion of the book is devoted to the alkaloids. Alkaloids are discussed according to their sources, the botanical classification being followed for the most part. There are a large number of very useful and lucid summaries and tables giving concise information in regard to color reactions, and the beautiful plates at the end are intended to give microscopical photographs of the crystalline structure of a great many drugs and poisons of great value to the microchemist.—D. I. MACHT.

Chemical Reactions and Their Equations; a Guide for Students of Chemistry. Second Edition pages IX–145, I. W. D. HACKH, Prof. of Chemistry, College of Physicians and Surgeons, San Francisco. P. Blakiston & Co., Philadelphia, 1928.

The transplanting of a knowledge of descriptive chemistry into the mind of the student is

ordinarily not a very difficult task—but, the teaching of stoichiometry—is another story. Prof. Hackh has in this little book restricted the data primarily to a consideration of purely chemical equations from a technical and arithmetical standpoint. We must not lose sight of the fact that so much depends upon the methods employed in the attempt to impart such knowledge to the student.

Chemistry has within recent years fully justified a prediction voiced by Prof. H. O. Jones[1] who ventured the opinion that "...the old purely descriptive chemists will drop more and more into the background, as the result of reconstruction of the basic science along physical and mathematical lines." On the other hand, the student of medicine and kindred sciences, has no practical use or need for the higher training in physical chemistry; the chemist in actual practice, in turn, relegates this phase of the science to the province of the academic specialist.

This little work by Hackh is therefore a welcome relief in the way of an elementary text whose sole claim to usefulness lies in its evident simplicity in presentation. The student is enabled to proceed through personal initiative. This is possible since the author has not, as is frequently the case with others, soared into the European realm of irrelevant material—thus making a more impressive-looking book—but of no more practical value to the student. The reason for the exclusion of impractical data is succinctly stated in a foot-note on page 2, to the effect that" chemists will continue to deal with atoms, and future progress in the sub-atomic realm will merely increase our knowledge of atomic structure, the relation among elements and their probably evolution—*but will not materially change the application of the Atomic Theory.*

The text occupies several chapters, each of which is concluded by numerous Exercises and Questions; certain portions of the appendix of the first edition have in this revision been incorporated with the text proper, as a matter of emphasis. The Appendix of the second edition consists of a key to Equations, Solubility Table, Preparation of Salts, Index and Glossary combined.

A Table of Atomic Weights and Atomic Numbers (1928) is included in which the most recently discovered elements, Illinium, Brevium, Polonium and Rhenium, are listed but no atomic weights are stated.

[1] New Era in Chemistry (1913), 298, N. Y.

The excellent features of this book having been discussed in the course of this review, render further summary unnecessary, particularly in view of the fact that the best criterion of value for any text usually lies in the demand for subsequent editions.—SIMON MENDELSOHN.

Filterable Viruses, The Williams and Wilkins Company, Baltimore, Md., 1928, cloth, 428 pages, with 27 illustrations, several microphotographs and 15 excellent plates. Edited by THOMAS M. RIVERS. The volume is neatly bound and well printed on unglazed paper. Price $7.50.

The book is the work of ten men who write with authority based on experimental research. Rivers, Carrel, Cowdry, Olitsky, Glaser and Bronfenbrenner are in the Rockefeller Institute for Medical Research; Mudd is assistant professor of experimental pathology in the University of Pennsylvania; Amoss is associate professor of medicine in Johns Hopkins Medical School; Goodpasture is professor of pathology in the Vanderbilt School of Medicine and Kunkel is in the Boyce Thompson Institute for Plant Research.

The filterable viruses affect man vitally in a multitude of ways, and this book treats of subjects of intense concern to every one. The reader will be convinced that the economic value of the results already gained outweigh all the money that has been spent in all fields of medical research, and it is obvious that greater advances will be made. The virus diseases include measles, mumps (?), scarlet fever, poliomyelitis, typhus, trench and yellow (?) fevers, rabies, smallpox, the common "cold" and grippe or influenza; also many which are of economic interest, such as hog cholera, swine pest and fowl-pox. The city dweller feels only a casual interest in animal diseases, but more than 100,000 animals were destroyed in order to control a recent outbreak of foot-and-mouth disease in California. It is desirable that the essential facts of virus diseases shall be appreciated as widely as possible.

In spite of the importance of the subject, space does not permit of adequate discussion here, because the book itself is little more than a presentation of the technic of research and the chief problems in this broad field, with summaries of the present status of the subject, and the space devoted to any chapter is not a measure of its value. The diseases caused

by the filterable viruses affect man in so many ways that it is difficult to decide what one may disregard in a review.

Rivers explains that the name "Filterable Viruses" was selected for want of a better. The classification is temporary and includes many infectious diseases of unknown etiology. In some cases filtration is difficult or impossible. Filtration methods are crude and one can only say that under certain conditions, a virus passes through a filter or does not, dependent on varying conditions, such as the electric charge. Efforts to measure the size of the viruses have proved disappointing, but probably a cubic inch would contain one million million million of the smaller ones. It is often difficult to deal with such minute substances and it is impossible, apparently, to cultivate many viruses in the absence of living cells. An atack of one of these diseases usually confers lasting immunity, whereas only exceptionally does a bacterial disease afford such immunity. Most of them show an extraordinary degree of specificity. Thus, poliomyelitis virus has been found active only in the monkey and in man, and rabies manifests its effects only after it has come into relation with cells of nervous tissue. Rivers stresses the importance of microscopic changes within the cell and warns against the danger of reports of inclusions not characteristic or of a specific nature. The reader becomes impressed with this view increasingly as he peruses the subsequent chapters. It is impossible to state whether certain viruses are living organisms or not, but it seems probable that the smallest contains not more than a few hundred molecules of protein. Rivers devotes 21 pages to the discussion and 29 pages to a well-classified bibliography.

Mudd discusses filters of various types and the technic of filtration. He says the apparent simplicity of filtration has been a pitfall and since an understanding of the process has not kept pace with the development of filters, confusion has resulted, and no one is competent to work in this field who is not well informed in this seemingly simple, but actually most complex subject. This chapter will interest those who use filters in other fields of investigation and assist them in selecting filters. Mudd describes filters of porcelain, kieselguhr with asbestos, plaster of paris and jelly, and discusses problems which their use involves. He points out that the diameter of the pores through which virus fails to pass is not necessarily an index of the size of the virus. He discusses that always interesting, and often troublesome, phenomenon, adsorption. The bibliography embraces 189 references.

Carrel discusses tissue cultures in the study of viruses. This chapter is largely concerned with the technic of the growth of tissues and their use in the preparation of cultures. Carrel says the contribution to the knowledge of viruses through tissue cultivation has been meager, but he says the technics described give us the best means of approaching the capital problem of the artificial production of a virus by the action of chemicals on cells, and he believes that the method of tissue culture may lead to the solution of some of the most important biological problems of the day, for example, that of malignant growths. A very small amount of pure tissue permits of the development of relatively large amounts of virus, and he says it is probable that a chick embryo crushed to a fine pulp is capable of producing as much vaccine as a living calf. The technic is simple and is susceptible of adaptation to the industrial production of pure vaccine virus.

Cowdry's chapter deals with intracellular pathology in virus diseases. He discusses cytoplasmic or nuclear inclusions in vaccinia, rabies, herpes and varicella, smallpox and other diseases, and inclusions of doubtful nature in warts, psoriasis, swine-fever, epidemic encephalitis and many other diseases, in each of which he treats of a restricted field. He says that owing to failure to employ available methods of investigation and to devise better ones, our knowledge of the composition of the inclusion bodies remains negligible. Cowdry says the term "inclusion body" is applied equally to materials developed within the cell and to others taken in from without. The term does not distinguish between the bodies and droplets of fat, ingested pigment and many other substances.

One is surprised to read that we know little of the changes in cellular activity induced by the viruses. However, the subject presents difficulties. We do not know whether virus acts on the surface of the cell or penetrates into the interior, or how cell and virus react upon each other. Cowdry states that cells may become one million times larger in lymphocystic disease in fish. It is startling to consider the result should a corresponding change occur in a considerable proportion of the cells of a tissue in man. With such fantastic changes in mind, one must restrain one's imagination with

reference to the possible rôle that viruses or kindred substances play in evolution, but this thought of the reviewer is not discussed in the book. Cowdry gives several excellent drawings and microphotographs, and a beautiful plate. The bibliography includes 75 references.

Amoss discusses virus diseases of man as exemplified by poliomyelitis and gives a bibliography of 255 references. The article includes a historical review, symptomotology, physical examination, prognosis, pathology, etiology, immunity, epidemiology and treatment. It is extremely interesting but it cannot be reviewed adequately here.

Olitsky discusses virus diseases in mammals as exemplified by foot-and-mouth disease, and vesicular stomatitis, with a bibliography of 107 references, which is well classified. The virus of foot-and-mouth disease has been studied more thoroughly than any other. The virus of vesicular stomatitis of horses is considered briefly because its taxonomy is based on the recent work of Olitsky and the American Commission. Olitsky discusses the discovery of the ultramicroscopic character of foot-and-mouth disease virus, its cultivation, its properties, the susceptibility of man and other animals to it, carriers, pathology and immunity.

Rivers believes the confirmation of Olitsky's cultivation of the virus of tobacco mosaic in a simple medium, presumably free of cells, would settle one of the most important problems in the whole field. The discovery that there are two types of the virus of foot-and-mouth disease is especially important. They do not induce cross immunization, nor can they be distinguished clinically. Olitsky's presentation of the controversial literature serves largely to show the complexity of the problems involved rather than to settle the points in dispute, but he also indicates the solid advance that has been made.

Goodpasture treats of virus diseases of fowls, as exemplified by contagious epithelioma (fowl-pox) of chickens and pigeons. It resists diffuse sunlight and cold for many weeks; hence, it probably survives in barnyards over the winter. It was long supposed to be identical with smallpox and vaccinia. For a time the view was dropped, but of late it has been revived. Goodpasture believes that they are not indentical, and says viruses of fowl-pox and of the human disease, molluscum contagiosum, offer a more inviting field for study. He says that while many of the infections now classified among the diseases due to filterable viruses are actually due to bacteria, to protozoan parasites, and possibly to non-living agents, he believes the viruses of contagious epithelioma, molluscum, vaccinia, variola (smallpox), rabies and some others which exhibit the property of filterability, together constitute a much smaller, more closely related and compact group. The article is illustrated with thirteen figures in three plates.

Glaser discusses virus diseases of insects, devoting about half of the space (with three plates) to sacbrood of honey bees, with an excellent summary of practical interest to bee keepers. The bibliography includes five papers by G. F. White. The second part of this chapter deals with polyhedral diseases of other insects, some of which, such as the army worm and the gypsy moth, are enemies of man, and Glaser says, in the summary, that the maladies discussed affect some of our worst agricultural and forest pests, often producing huge epidemics among them and contributing inestimably towards their control. Unfortunately, the silkworm is also affected. The curious polyhedral bodies are of diagnostic, but not of etiologic, value. This part of the chapter concludes with a summary and bibliography of 36 references.

Kunkel treats of virus diseases of plants. He mentions some 200 species in an incomplete list of plants susceptible to mosaic diseases. He gives a brief summary and a bibliography of 102 references. He says that the virus diseases seldom kill plants, though they may lower their resistance to other diseases that do kill them. He emphasizes the fact that they are insect-borne.

Bronfenbrenner discusses virus diseases of bacteria—bacteriophagy. Bacteriophagy or transmissible lysis of bacteria, often called the Twort-d'Herelle phenomenon, is discussed, because d'Herelle believes that there is a disease of bacteria produced by an autonomous, ultramicroscopic, corpuscular virus. Bronfenbrenner states that many of his own views are not in agreement with those of d'Herelle. The author gives a historical review of the subject and theories relating to bacteriophage. The subject presents many questions that are still in dispute and no detailed review is attempted here, though it is conceivable that this division may eventually outweigh all the others in importance. This, however, does not seem probable. The bibliography includes references to 225 papers.—Robt. A. Hatcher.